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DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEARS 1992 AND 1993

HEARINGS

BEFORE THE

COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE

ONE HUNDRED SECOND CONGRESS

FIRST SESSION

ON

S. 1507

AUTHORIZING APPROPRIATIONS FOR FISCAL YEARS 1992 AND 1993 FOR MILITARY ACTIVITIES OF THE DEPARTMENT OF DEFENSE, FOR MILITARY CONSTRUCTION, AND FOR DEFENSE ACTIVITIES OF THE DEPARTMENT OF ENERGY, TO PRESCRIBE PERSONNEL STRENGTHS FOR SUCH FISCAL YEARS FOR THE ARMED FORCES AND FOR OTHER PURPOSES

PART 1

MILITARY POSTURE
UNIFIED COMMANDS
MILITARY SERVICES' OPERATIONS
MILITARY STRATEGY
DOE PROGRAMS
STRATEGY ISSUES
BUDGET OVERVIEW
STRATEGIC ENVIRONMENTAL R&D
INDUSTRIAL BASE

FEBRUARY 21; MARCH 6, 13, 19, 20; APRIL 11, 18, 23, 25; MAY 14; JUNE 18, 1991

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DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEARS 1992 AND 1993

THURSDAY, FEBRUARY 21, 1991

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

FISCAL YEARS 1992 AND 1993 DEFENSE AUTHORIZATION REQUEST AND THE FISCAL YEARS 1992-1997 FUTURE YEAR DEFENSE PLAN

The committee met, pursuant to notice, at 9:10 a.m., in room SH-216, Hart Senate Office Building, Senator Sam Nunn (chairman) presiding.

Present: Senators Nunn, Exon, Levin, Kennedy, Bingaman, Dixon, Glenn, Gore, Wirth, Shelby, Warner, Thurmond, Cohen, McCain, Lott, Coats, Mack, and Smith.

Committee staff members present: Arnold L. Punaro, staff director; Andrew S. Effron, general counsel; Richard D. DeBobes, counsel; and Madelyn R. Creedon, counsel.

Professional staff members present: Robert E. Bayer; Robert G. Bell; Richard E. Combs, Jr.; Richard D. Finn, Jr.; Douglas George; Creighton Greene; John J. Hamre; David S. Lyles; Michael J. McCord; and Frederick F.Y. Pang.

Minority staff members present: Patrick A. Tucker, minority staff director and counsel; Romie L. Brownlee, deputy staff director for the minority; Claire M. Kelly, special assistant; Brian D. Dailey, Judith A. Freedman, George K. Johnson, Jr., Ronald P. Kelly, George W. Lauffer, John E. Mansfield, Durwood W. Ringo, Jr., Mark B. Robinson, and Ann Elise Sauer, professional staff members.

Staff assistants present: Barbara L. Braucht, Kelli J. Corts, Barbara Gallo, Camden Jones, Julie W. Kemp, Cindy Pearson, Debra A. Rice, and Mickie Jan Wise.

Committee members' assistants present: Andrew W. Johnson, assistant to Senator Exon; Kenneth N. Luongo, assistant to Senator Levin; William J. Lynn, assistant to Senator Kennedy; John P. Gerhart, assistant to Senator Bingaman; Charles C. Smith, assistant to Senator Dixon; Milton D. Beach, assistant to Senator Glenn; Leon S. Fuerth, assistant to Senator Gore; Jefferson B. Seabright, assistant to Senator Wirth; Terence M. Lynch, assistant to Senator Shelby; Dale F. Gerry, assistant to Senator Cohen; Marshall A. Salter, assistant to Senator McCain; Thomas G. Moore, assistant to

Senator Wallop; Samuel D. Adcock, assistant to Senator Lott; Eric H. Thoemmes and Philip E. Thoden, assistants to Senator Coats; Saul H. Singer, assistant to Senator Mack; and Thomas L. Lankford, assistant to Senator Smith.

OPENING STATEMENT OF SENATOR SAM NUNN, CHAIRMAN

Chairman NUNN. The committee will come to order. The Armed Services Committee meets this morning to receive testimony on the Department of Defense budget for fiscal years 1992 and 1993, and also, the 1992–1997 future year defense plan.

Secretary Cheney and General Powell, I would like to welcome you both here this morning. I also want to take this opportunity to congratulate both of you on the planning and execution of the war effort in the Persian Gulf. Our men and women in the military services and our leaders, particularly the two of you, are doing an excellent job and you certainly have the support of this committee and the members on this committee.

Senator Warner and I, in our capacity as chairman and ranking minority member of this committee, along with Senator Inouye and Senator Stevens, chairman and ranking member of the Defense Subcommittee on Appropriations, accepted your invitation, which we appreciated, to visit our military commanders and our forces in the Persian Gulf, where we have been for the last 5 days.

I came back yesterday with an even deeper appreciation for the skill and professionalism of our men and women in uniform, and for the competence and common sense of our military commanders. The troops we visited, including those in the desert in the forward areas, the B–52 crews in England working through the night to rearm their planes for other missions, the operators of the Patriot batteries standing guard 24 hours a day, the pilots and maintenance crews of our fighter and attack aircraft including the new addition—the stealth fighter, the crews of the critical command and control and electronic warfare aircraft fly around the clock, the naval forces afloat, including those with cruise missiles, the embarked marines and those involved in one of history's most remarkable and successful logistics operations which does not get nearly enough attention—they are doing a remarkable job—are all demonstrating the highest level of professional competence, skill, dedication, and morale.

We, of course did not visit all of our units in the Persian Gulf, but I know that those we visited are representative of our regular and reserve forces deployed throughout the region and those supporting them back here at home. These men and women serving in Operation Desert Storm truly are America's finest. We can all take pride in their efforts. They deserve a heros' welcome when they return home, which we all hope will be in the near future.

My views on the need to maintain America's technological edge were reinforced by the crucial role our technology is playing in this war. America's finest troops are backed up by the best in American technology. One of the great success stories of Operation Desert Storm is the performance of our high-technology systems such as AWACS, JSTARS, the RPV's—Remotely Piloted Vehicles, the stealth fighter, our entire electronic warfare capability, and of course, the Patriot Missile System, among others. The Patriot missile, of course, has been a high-tech performance which we have to come to view with a great deal of pride, and it certainly has made a difference in the overall strategic alliance and in the war. We had that first-hand while we were in Israel.

America's defense industry also deserves a well done for providing out technological ace in the hole. Our defense industry is constantly under fire. Some of it deserved, some of it not. But when they do a good job, as they have done with so many of the systems, I think they too deserve a pat on the back.

Mr. Secretary and General Powell, once the fighting is over, this committee looks forward to working with you to conduct a thorough review of the lessons learned from this war, from the planning and the tactics to the capability of our weapons systems to the mobilization of the Reserve and National Guard units. As pressing as the current crisis in the Persian Gulf is, we must not lose sight of events in other parts of the world that directly affect our national security today, but even more so in the future.

Last year, the disintegration of the Warsaw Pact, the impending reunification of Germany, and the signing of the treaty on conventional armed forces in Europe, provided an encouraging backdrop for this hearing. This year the changes in the Soviet Union and Eastern Europe have been almost as dramatic, but far from encouraging. Soviet troops have fired on unarmed civilians in Lithuania and Latvia, the February Summit between President Bush and President Gorbachev has been postponed, and the CFE Treaty has effectively been put on hold.

In the coming months, this committee will be holding a series of hearings that will examine the changes in the Soviet Union and Eastern Europe and what these changes mean for our national security in the future.

Mr. Secretary, I had a chance to look at your testimony this morning. I have not read all of it, but most of it, and I thought you did an excellent job at analyzing those changes and putting it in the perspective of U.S. military strategy, which of course we had asked you to address. So we look forward to hearing that, and we appreciate your addressing those important subjects for the future.

These changes in the world come at a time when the United States is significantly reducing the size of our defense budget. The fiscal years 1992–1993 defense budget conforms to the budget summit agreement reached last year between the President and the Congress. This budget represents the 7th year of real decline in the defense budget. By fiscal year 1996, the defense budget will have declined in real terms for 12 consecutive years. This budget continues the process begun last year, reducing the size of our military force by approximately 25 percent by fiscal year 1995. The fiscal year 1996 budget will be 34 percent lower than the fiscal year 1985 level in real terms. By fiscal year 1996, the Department projects that defense spending will be 3.6 percent of our gross national product which will be, if it is continued at that level, the lowest level in over 40 years.

Of course the costs of the Persian Gulf war are exempt from the ceilings of this budget summit agreement and are not included in these calculations. Congress will provide all the resources our men and women need to conclude this campaign successfully. I do not have any doubt about that.

As we reduce the size of our military structure, it is essential that we have a clear understanding of the threat to our national security and how our military forces should be restructured to meet those threats most effectively. In preparation for today's hearings, Senator Warner and I wrote Secretary Cheney and General Powell, and we asked that they focus their testimony on how the threats on which our past national security policies have been based are changing, particularly in Eastern Europe and the Soviet Union, what revisions they made in our military strategy in light of these changing threats, and how the priorities in the fiscal years 1992–1993 defense budget and future year defense plans reflect the revisions in our military strategy.

Without objection, I will insert a copy of that letter of invitation in the record.

[The information follows:]

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC, February 11, 1991.

Hon. RICHARD B.CHENEY,
Secretary of Defense,
The Pentagon,
Washington, D.C.

Dear Mr. Secretary: We would like to invite you to appear with General Powell before the committee on February 20 to present your Posture Statement, the Fiscal Years 1992/93 Defense Budget Request, and the Fiscal Years 1992–97 Future Year Defense Plan.

As we discussed, the committee would like you and General Powell to focus your testimony on how the threats on which our past national security policies have been based is changing, particularly in Eastern Europe and the Soviet Union; what revisions you have made in our military strategy in light of these changing threats; and how the priorities in the Fiscal Years 1992/93 Defense Budget and the Future Year Defense Plan reflect the revisions in our military strategy.

This hearing will begin at 9:00 a.m. in room 216 of the Hart Senate Office Building. We anticipate a morning and afternoon session. We look forward to your testimony.

Sincerely,

SAM NUNN,
Chairman.
JOHN W. WARNER,
Ranking Minority Member.

Chairman NUNN. In closing, Mr. Secretary, I want to point out that this is a very favorable year, maybe the most favorable we will have for some time to come to make progress toward the goal I know we both support, enactment of a 2-year defense budget. Unlike past years, we have firm budget targets this year for defense spending for the next 2 years and for overall spending. It is the first time we have had that in that context. This committee has strongly supported a 2-year defense budget in the past. We are going to try to do as much as possible this year for the second year. We hope the Appropriations Committee will do likewise. We will need a lot of help from you in persuading our colleagues to move in that direction.

Mr. Secretary and General Powell, as I have said, we look forward to working with you this year. Before you make your opening statements, I will turn to Senator Warner for any comments he might have.

Senator **Warner**. Thank you Mr. Chairman. I will be brief.

I join the Chairman in his observations in commending the President and yourself, Mr. Secretary, and you, General Powell, for leadership that has really been unparalleled since the days of World War II. In the 47 years I have had the opportunity and privilege to observe men and women in uniform, I have never seen a finer, better trained, more highly motivated group. And that is manifested at all levels. They are ready to perform whatever mission is directed by the President through yourselves.

We are hopefully going to achieve a greater stability in that region in the not distant future. Just how and when remains to be seen. But the underlying principal of peace through strength which has guided these countries these many years will have been proven with this group beyond any doubt. I thank the Chair and I thank the members.

I would like my prepared statement be made part of the record.

Chairman **Nunn**. Thank you, Senator Warner. It is so ordered.

Senator Thurmond has also requested that his statement be made part of the record.

[The prepared statements by Senator John W. Warner and Senator Strom Thurmond follow:]

PREPARED STATEMENT BY SENATOR JOHN W. WARNER

Thank you, Mr. Chairman. I want to join you in your commendation of the American and Alliance forces we were privileged to meet over the past 5 days. Let me take just a couple of minutes to describe some personal observations about our military capabilities in the Gulf.

First, the military assets we have been able to deploy to the Persian Gulf are the direct result of the monies this Nation committed to rebuilding our military over the last several years. The technology is awesome! It works—it is integrated among the services—and most importantly, the technology in which we have invested has already and will continue to save American lives. Talk to the pilots of the F-117 who flew directly over Baghdad on the first night of the war.

Having heard directly from the American soldiers, sailors, airmen and marines whose lives are at stake about how our modern weapons systems save lives, I must say that I am more convinced than ever that we must continue to invest in modern technology weapons. We owe no less to our military personnel.

Second, I must also observe that even with our technology, it is still the men and women of our Armed Forces who are the key to the success of this or any other military operation. From the forces arrayed on the front lines in the desert, to those over the skies of Iraq and Kuwait, to those at the support bases in the Persian Gulf, to these here in the United States providing logistic and service support—each and every one of them is a true American hero. From the dark days of the late 1970s, we have built the most competent and dedicated armed force—all volunteers—in the history of this country. We must never again let the people of our Armed Forces be viewed as anything less than what they are—dedicated, patriotic Americans who have answered the call of their Nation.

At every stop during our trip, I told our forces that they should plan on returning home, hopefully soon, to the largest celebration our country has seen since those of V-E and V-J days in 1945. All of us in this room, in this Congress, and in this country, should commit ourselves today to making sure that this happens.

Third, defending freedom is not cheap. Modern technologically advanced systems are expensive—but they avoid needless loss of life, the lives of American service personnel, the lives of innocent civilians, and yes, if able to bring about an earlier end of war, the lives of the opposing military personnel. Building and maintaining volunteer military forces made up of bright, competent, and dedicated individuals cost billions of dollars a year—but we are seeing today that this is money well spent.

Defending freedom is worth these costs. We in the United States must recognize that we are and must remain a leader in this world. That has a cost. But if we are not prepared to bear the costs of world leadership, then we will be relegated to the role of follower. I, for one, am aware of no other nation in this world which has the moral, political, and economic standing to assume this role. Only the United States is fully capable of defending freedom here and abroad. And when necessary, we must be prepared to do so, with military force if required. We in the United States will never fully attain the freedom to which we aspire, and for which we stand, if others in the world seeking that same freedom can be denied it by dictators like Saddam Hussein. That is why our forces are in the deserts of the Persian Gulf today and that is why Iraq will not and cannot be permitted to prevail.

Finally, Mr. Chairman, if I may take just one minute more, the four of us from the Senate who had the opportunity to visit our forces over the last several days attempted to make clear to those forces, on behalf of the Nation, our deep and abiding admiration and thanks to those forces for the job they are doing. But there were hundreds of thousands of other personnel, military and civilian, to whom we were unable to directly convey those feelings.

We have before us today two of those individuals—

So I want to take this time to openly and publicly say to everyone involved in managing this operation to the President and Secretary of Defense, to the Chairman of the Joint Chiefs of Staff, to each and every commander, officer, and enlisted member of our Armed Forces, to our defense civilian employees, our contract employees, and the employees of our defense industries, and to the families, friends, and loved ones of all of these personnel, I as a citizen of this Nation thank you for all you are doing to defend freedom.

And now Mr. Chairman, I also join you in welcoming back these two great Americans to testify before this committee.

Mr. Secretary, we note that this budget meets the reduced defense spending targets set in the budget agreement reached last year. Of course, we also need to look at the supplemental request to get the full picture. I understand we should have the supplemental before the end of the week.

I note that the defense budget request for fiscal year 1992 continues its steady decline since fiscal year 1985. Under this plan, the defense budget will have declined by 34 percent in real terms by 1996. In an historical context, this budget plan would cut defense spending as a share of GNP to its lowest level in over 50 years. Even with the dramatic changes we have witnessed in the Soviet Union and Eastern Europe, reductions of this magnitude concern me. The uncertainty and unpredictability of world events—particularly the unrest in the Soviet Union and the postwar situation in the Persian Gulf—cause me to worry about our future ability to respond to threats to our interests and national security.

Mr. Chairman, a year ago when we held these hearings, I expressed my doubts that anyone could have predicted the significant changes that had occurred the previous 6 months in the Soviet Union and Eastern Europe. I am equally certain that there is no one here today who could have predicted 1 year ago that we would be involved today, along with 27 other nations, in a war with Iraq—that we would have over half a million of our servicemen and women engaged in this conflict with Saddam Hussein's forces. One year ago, many here were clamoring for a peace dividend—today, our Armed Forces are engaged in a major war.

While significant and favorable developments may have occurred in Eastern Europe and the Soviet Union, the world we live in is, nevertheless, a dangerous and unpredictable place. As eight Republican members of this committee stated in last years Senate Armed Services Committee Report on the Fiscal Year 1991 Defense Authorization Act, and I quote: "An examination of regional threats to Western interests shows that the world has not become a safer place for the West in areas outside of Europe. Unfortunately, the dramatic changes we have witnessed in Europe have yet to spread to other regions of the world. Therefore, we do not agree with the assessment that developments around the world—not just in Europe—justify fundamental changes to U.S. national security policy and military strategy."

In my opinion, events of the past year have validated this judgment. In addition to very real threats to Western interests in the Gulf, we are currently faced with an unraveling of Gorbachev's reforms in the Soviet Union which may have significant consequences for our military posture.

The threat to Western Europe has clearly been reduced by the disintegration of the Warsaw Pact, the unification of Germany, and the anticipated reduction of conventional forces under the CFE Treaty. Nevertheless, the political and economic turbulence in the Soviet Union is evident in the crisis in the Baltic Republics, problems encountered in the START negotiations and in the Soviet interpretation of the CFE Treaty, as well as in implementation of agreements relating to Soviet troop withdrawal from Germany and Poland.

As the only true global power in the world, we must maintain the military capabilities necessary to respond to future emergencies and contingencies in the world. While I generally agree with the priorities reflected in this budget request, I am concerned about the uncertainties we face in the world, the direction we are headed with defense spending, and the adequacy of our military forces 5 or 6 years from now, under the current defense plan.

One of the questions foremost in my mind and which I intend to ask is, "If the situation with which we are now confronted in the Persian Gulf occurred 5 to 6 years from now—after implementing the proposed reductions in defense funding and force structure we are now contemplating—would we have the capability to conduct Operation Desert Storm as well as we have today?"

As a result of our operations in the Persian Gulf, there are several issues which have surfaced.

The Patriot missile has clearly demonstrated the importance of missile defenses. Consider the military and political implications of our situation in the Gulf in the absence of the Patriot system. Or consider our plight if Saddam Hussein had waited several years to start this war—until he had acquired intercontinental missiles with chemical or nuclear warheads capable of reaching the United States. Instead of SCUD missiles aimed at Saudi Arabia and Israel, it could be Iraqi ICBMs headed for U.S. cities or nuclear armed missiles aimed at our allies in the Gulf.

Fifteen to 20 developing countries will possess ballistic missile capabilities by the end of the century. Three countries may possess long range missiles capable of reaching the United States. I believe we must pursue a vigorous SDI program to develop missile defenses to protect this country as well as improved anti-tactical missile systems to provide better protection for Army contingency forces and Naval and Marine expeditionary forces, as I tried to persuade this committee last year.

We must also examine the optimum balance between pre-positioned overseas equipment (POMCUS), Maritime Pre-Positioned Equipment (MPS), and increased sealift and airlift capacity in order to enhance our capabilities to respond rapidly to future, distant trouble spots.

We also need to take a more realistic look at our Total Forces concept to determine the optimum structure for our Active, National Guard and Reserve forces.

Mr. Secretary, General Powell, I commend you both for the exceptional leadership you have provided our forces in the Gulf, and the outstanding manner in which you have managed this war.

I look forward to your testimony.

PREPARED STATEMENT BY SENATOR STROM THURMOND

Thank you, Mr. Chairman. Good morning, Secretary Cheney and General Powell. I want to join the Chairman, Senator Nunn, and ranking member, Senator Warner, in extending to you a warm welcome to today's hearing. I also want to commend both of you for your exceptional leadership and management of Desert Storm and at this critical time in our Nation's history. The strength of your commitment is reflected in the fine performance of our fighting men and women throughout your chain of command.

Mr. Chairman, last year at this time, the Nation was caught up in the euphoria of the demise of the Warsaw Pact and the prospect of a "Peace Dividend." Although we all welcomed the dramatic changes in the Eastern bloc, some of us cautioned against making drastic changes in our defense programs and the assumptions used by the majority in formulating last year's authorization bill.

Unfortunately, those concerns of the minority, as expressed in our additional views, became a reality. Today, we are engaged in the largest military operation since World War II and are facing a revival in Soviet militarism. These reversals are examples of the uncertainties of the world situation and the need for our Nation to maintain a defense posture that is strong across the spectrum of capabilities. As I stated last year, any build-down in our capability must be cautious and based primarily on changes in the objective military threat, not on declared intentions.

The budget request before us today, in my judgment, is pared to the bare minimum. It stops the production of the MX missile at a time when the outcome of START talks is questionable and while the Soviet Union continues to modernize its strategic arsenal. It also reduces our military force structure while there are questions on Soviet compliance with the Conventional Forces Europe Treaty.

We must consider the implications of these reductions on our Nation as we enter the 21st century. Just as the military decisions the Congress made in the early

1980s are reaping positive benefits in the Middle East today, the decisions we will make on this budget will have an impact well into the next century.

Mr. Chairman, we must all be concerned about the current uncertainties facing the Soviet Union. All indicators are that President Gorbachev's influence is waning and that the power of the traditionalists and military factions are growing. There are signs that these traditionalistic factions will reverse the progress made in relations between our Nation and the Soviet Union in both nuclear and conventional disarmament talks.

As the ranking member of the Strategic Forces and Nuclear Deterrence Subcommittee, I am particularly concerned by the stalemate in the START talks. This budget may not be visionary enough to continue the modernization of our strategic forces. As I previously mentioned, we are terminating the production of MX missiles which will limit our ability to test the system and to fulfill future ICBM modernization requirements. The budget significantly cuts the Rail-Garrison Peacekeeper program. It limits production of the Trident submarine to 18 boats and defers the backfit of the D-5 missile beyond 1997. These cuts are being made at a time when the Soviet Union, despite its economic woes, is continuing its Strategic modernization program. Specifically, the Soviets are planning to produce five new ballistic missiles.

I hope that my colleague, the subcommittee Chairman, Senator Exon, will agree with me that the Strategic Forces Subcommittee must examine this matter more closely. I would urge that we make the necessary adjustments to ensure the continuation of our Strategic weapons modernization and provide our Nation with the strategic power of deterrence we have become accustomed to over the past 40 years.

Mr. Secretary, General Powell, our men and women in the Middle East are performing magnificently. Thanks to your foresight and to the foresight of your predecessors, our fighting men and women have the equipment and supplies to not only carry out their mission—but to win. I want to ensure that the next generation of soldiers enjoy the same support and I will work closely with you to achieve that goal.

Thank you for your dedication to this great Nation and the men and women who serve it so proudly.

Chairman NUNN. Secretary Cheney, and then General Powell.

STATEMENT OF HON. RICHARD B. CHENEY, SECRETARY OF DEFENSE

Secretary CHENEY. Thank you very much, Mr. Chairman and members of the committee. I am delighted to be back before the Senate Armed Services Committee to talk about our long-term plans for our military force posture and strategy.

Mr. Chairman, what I would propose this morning is to focus upon those items you mentioned in your opening statement. There has already been a lot of testimony this year about dollars and programs and the defense budget, but we would like to spend this time as you requested focusing specifically upon the longer term assumptions that underlie our strategy, how that strategy is changing and evolving. I will have some general testimony to that effect and then would ask the distinguished Chairman of the Joint Chiefs, General Powell, to talk about what the forces would look like in the future. And then, if I may close just briefly with a couple of minutes on what the overall budget numbers look like, we will be happy to respond to your questions.

I do not plan in my testimony to spend a lot of time on Operation Desert Storm. That is not because it is not the most important subject we are faced with these days; obviously it is of enormous importance and of great interest to everybody. We will be happy to respond to questions on Operation Desert Storm from members of the committee, but as the committee requested, we will focus our comments upon the longer-term perspective of where we are going with U.S. military strategy.

As we meet today, Mr. Chairman and members of the committee, the Department is really engaged in two very formidable tasks. On the one hand, we are fighting a major war in the Middle East. On the other hand, we are also involved in restructuring and reducing America's military forces to adapt to the change in the strategic environment to meet the challenges and opportunities that we all see in a post-Cold War era. Today is an important step in that process.

Underpinning each of these tasks is a new strategy for America's defense. This strategy was first set forth publicly in a speech by President Bush last August in Aspen. Unfortunately it was August 2, the same day that Saddam Hussein invaded Kuwait. Therefore, we have not had as much time this past fall to talk about the changes in our military strategy as we might have liked. The strategy unveiled by the President last August does indeed prepare us to deal with the situation we now face.

Specifically, President Bush's new approach directed attention away from a global war beginning in Europe, a contingency that has necessarily preoccupied America's planners for the last four decades. The new strategy focuses instead on regional contingencies and on sustaining the forward military presence in peacetime necessary to deter the outbreak of regional wars and conflicts.

The new strategy also emphasizes that technological breakthroughs will change military art, even as our stealth fighters today carry a disproportionate role in the air war in the Middle East. It calls for a ballistic missile defense, much as American Patriot units are now engaged in almost nightly. It directs resources for increased mobility, as we conduct one of the largest and most rapid deployments in our Nation's history. And it recognizes potential new roles for us, for our allies, and for the Soviets, even as an unprecedented international effort has been forged.

But it is also a strategy that recognizes the importance of the continuing historic roles for America's defense, as our Army, Navy, Air Force and Marines prepare for one of the largest land assaults of modern times. It cites the continued importance of the quality of our Armed Forces and the critical need to maintain and modernize our strategic capabilities. It also warns of the continued need for caution in an uncertain world—the need to be ready to rebuild, even as we plan to reduce dramatically over the next several years.

Today I want to discuss the new strategy, the elements that underlie it, and its implications for our defense budget. For an effective strategy for America's defense requires a sound understanding of the challenges and the opportunities ahead of us, a clear sense of our interests and goals, and an honest appreciation of our strengths and characteristics as a nation.

On these sound bases, the President has built America's defense strategy for the 1990s, a strategy fully reflected in the force structure and programs contained in the defense budget which we are now submitting to the Congress.

The remarkable changes of 1989 in Europe and the Soviet Union brought to the fore the need to reexamine our strategy of containment that had guided us from the early post-World War II days. But there are other changes afoot, partly as a consequence of the end of the Cold War, partly as a result of other historical trends.

These have interlocking effects for our purposes as a nation and on the resources that we will devote to our defense.

Let me discuss briefly problems and opportunities in four separate categories: first, changes in the Soviet Union and the Warsaw Pact; second, changes in future regional threats; third, changes in relations with our allies; and, fourth, changes in the nature of warfare.

The past 2 years have seen extraordinary historic changes in the strategic environment. The revolutionary change in the nations of Eastern Europe has been more wide-ranging and sweeping than anything we have seen in the last 40 years. Non-Communists now lead each of the former non-Soviet Warsaw Pact states. Germany has been reunited in NATO. The Soviet Union has agreed to withdraw its troops from Czechoslovakia, Hungary, and Germany and is unilaterally reducing its general purpose forces at home. The Warsaw Pact is set to be dissolved April 1. In short, the West has achieved an enormous strategic success.

The Soviets have played a responsible and helpful role in many of these developments. Communism collapsed in Eastern Europe and is under siege elsewhere because it failed to nurture the spirit and the innovation of its individual citizens. Democracy and free market economies have proven more durable, more successful, and more responsive to the aspirations of mankind.

But the Soviets helped the change along, and in the past 2 years they took some steps toward reform at home as well. Significantly, the Soviets have also joined the overwhelming majority of the international community in supporting 12 U.N. Security Council resolutions condemning Iraq's wanton aggression in the Persian Gulf. In this sense, I think it can now be said, at last, that the Cold War is over.

Last fall, during trips to Poland and the Soviet Union, I witnessed some of these advances firsthand. In Moscow, I addressed a joint meeting of the Defense and State Security and International Affairs Committees of the Supreme Soviet, and this experience in particular left me with a sense of the enormous changes that have taken place in the Soviet Union.

But the moves toward democracy and demilitarization of the Soviet Union that we all welcomed now appear to be in doubt. Recent, worrisome events raise questions about the prospects for needed economic and political reform and the Soviet Union's future course at home.

The economic situation in the Soviet Union today is as bleak as it has been any time since the end of World War II. In October, about the time I visited the Soviet Union, the central government rejected the Shatalin Plan, the economic program that seemed to hold the most real prospect for reform in the Soviet economy. The Soviet Government has taken other steps that make any significant improvement in the Soviet economy less likely, including reasserting the priority of state orders in the economy, authorizing the KGB to search business enterprises for economic data, and otherwise countering the movement toward free markets and prices.

These actions are certain to trouble Western businessmen contemplating investments in the Soviet Union. In short, the Soviet central government has, for now, apparently abandoned economic reform and in turn has been abandoned by the most prominent economic reformers, many of whom are now working with the Government of the Russian Republic.

As a result of the center's policies, the Soviet economy is collapsing. There only remains the question of how rapidly the shrinkage is actually occurring. Estimates for 1990 range from an official Soviet estimate of some 2 percent reduction in Soviet economic activity to at least a 10 percent reduction in the 12 months ending February 1991. Many experts anticipate that 1991 will see a further contraction of the Soviet economy.

President Gorbachev's success in the eyes of many hinged upon his ability to deliver economic reform, to move the Soviet Union into the modern era so that it could compete with the West. Success depended, first and foremost, on his ability to dismantle the old structures that clearly did not work, and to put new structures in their place. In my view, to date, he has clearly not yet achieved that transformation.

Given this failure, we have to anticipate that there will continue to be economic decline and increased prospects for significant unrest. If the government pursues additional anti-reform steps, Moscow will find itself locked in a vicious cycle. It is hard to discern, at this point, a strategy at the center for dealing with these problems or for regenerating the process of reform.

Political reform in the Soviet Union is also under attack. Leading liberal political figures have left the government—most notably former Foreign Minister Shevardnadze. His resignation speech warned of impending dictatorship. Shortly thereafter, the government resorted to and sanctioned a crackdown on the freely-elected governments in the Baltic states. There has been a reversal of progress in human rights and a broad campaign attacking press freedoms. Political conflict has worsened.

Rather than moving toward greater openness to resolve the underlying problems, President Gorbachev appears ready to rely on the security services and the military and the use of force to maintain order inside the Soviet Union. They have issued a decree establishing joint Interior Ministry-Army patrols. There is now widespread consensus among Soviet observers that the central government is increasingly influenced by the military and security services, as well as the Communist Party bureaucracy.

In the absence of ongoing reform, there is little prospect for a permanent transformation in East-West relations. Experience shows that ultimately U.S.-Soviet relations are driven by how the Soviet Union governs itself. Except at the margins, long-term improvement depends upon democratization and demilitarization of Soviet society. The failure of reform would not necessarily mean a return to the worst days of the Cold War, but it would prevent movement to a thorough-going, across-the-board state of cooperation with the Soviet Union.

Reform need not fail. Our President has said many times that we want the process of reform in the Soviet Union to succeed. We still hope that it will be successful, and the central government, we believe, may still be able to take steps to return to the path of reform.

What do these conflicting trends mean for our long-term defense requirements? I think there are five specific implications that have to be considered. First, the Warsaw Pact is dead as a military organization. I do not see any possibility of resurrecting it. Even though the Soviet military will remain, by a wide margin, the largest armed force on the continent, the threat of a short-warning, global war starting in Europe is now less likely than at any time in the last 45 years.

The U.S.S.R. will very likely continue withdrawing forces from Eastern Europe. The withdrawals from Hungary and Czechoslovakia are well on their way to completion, and, despite some recent difficulties, we anticipate that withdrawal from Germany and Poland will be completed some time thereafter.

Second, the Soviet ability to project conventional power beyond its borders will continue to decline, whether that decline is part of a broad strategy of improving relations with the West or whether it is simply an unintended effect of the continued economic collapse of the Soviet Union. For the moment there does not appear to be a constituency for a revanchist policy toward Europe or a forward policy in the Third World.

More generally, as many Soviets have noted, the Soviet Union has a sick economy, and it is getting sicker. The military is not able to insulate itself completely from this broader social illness. As a consequence, some of its capabilities inevitably will be degraded. Thus, I think overall the Soviets are going to find it increasingly difficult to project power beyond their borders, and that obviously reduces the threat we have been faced with for the past 40 years.

Third, there is enormous uncertainty about developments inside the Soviet Union, and this should be reflected in our planning. Absent a return to the course of reform, I believe the Soviet decline will continue. Growing unrest and violence in the Soviet Union would threaten its neighbors in Central and Eastern Europe, since some of the turmoil may spill over the borders of the Soviet Union.

This unrest will be particularly troubling to the Soviet Union's neighbors, since, as former Foreign Minister Shevardnadze said not long ago, and I quote directly from his speech: "No one can calculate the consequences of a social explosion capable of igniting not only befogged minds but also the giant stockpiles of nuclear and chemical weapons and nuclear power stations and the zones already weakened by environmental and natural disasters and regions shaken by interethnic strife."

As the situation deteriorates in the Soviet Union, anti-Communist democrats and ethnic nationalists could well take to the streets in protest, or they may flee, taking advantage of the opportunity to depart while more liberal emigration rules still apply. Large flows of refugees to Europe are a concern, I know, to Eastern European leaders.

As a result, the East Europeans will be increasingly concerned about their security. We, in turn, will need to address the kind of relationship we want to establish with the newly-emerging democracies in Eastern Europe.

Fourth—and a key point—the Soviets not only retain significant strategic capability but they are modernizing it virtually across the board. It is expected that Soviet nuclear forces will be fully modernized by the mid-1990s, including Typhoon/Delta IV Submarines, SS–24 and SS–25 missiles and follow-ons to each, and the new highly-accurate version of the SS–18 missile. They will also modernize their air-breathing forces with the ALCM-carrying Bear-H, Blackjack and Backfire bombers, among other improvements.

In all, we believe there are some 5 or 6 new Soviet long-range ballistic missiles currently under development. The U.S.S.R. also continues to modernize its strategic defenses. While we seek to capitalize on the significant reductions in conventional capabilities, we must also recognize the continued importance of maintaining our own robust strategic offensive/defensive capabilities.

Fifth and finally, with respect to the Soviet Union, the prospects for arms control are now in doubt. We have serious unresolved differences with Moscow over the agreement to reduce Conventional Forces in Europe. There is still, at this time, no resolution on START, although at various times there has been reason to believe that we were very close to finishing a START agreement. These setbacks in arms control demonstrate the spillover effects of Soviet domestic unrest and the resurgent role of the military.

Nevertheless, we remain hopeful that we may yet conclude meaningful arms control agreements with the Soviets and be permitted to implement those agreements.

The second general category I wanted to address, Mr. Chairman, are changes in future regional threats. The cooling of the superpower rivalry has implications for regional conflicts as well. The containment strategy that dictated a significant part of our regional interests derived directly from Moscow's expansionist strategy for the last 40 years. U.S.-Soviet rivalry did not create U.S. regional interests but gave them a special context and urgency. In a new era clearly there is the prospect for treating regional issues independent of the East-West context.

A true demise of the Cold War therefore promises many positive effects on regional conflicts, including greater superpower cooperation, with the most dramatic example to date being Soviet support in the United Nations against the aggression of Iraq. A cooling of superpower rivalry decreases the chances that a regional conflict will escalate into global war—a worrisome concern throughout the Cold War.

This shift drains many regional insurgencies of their most common source of military and economic support, and undercuts adherence to Communist ideological fervor. On the other hand, there is a risk that the end of the bipolar world could unleash local, destructive forces that were previously kept in check. For example, some have suggested that perhaps Saddam Hussein saw the end of the Cold War as an opportunity to pursue his own course of expansionism.

Whatever the positive consequences of Soviet "new thinking" on foreign affairs, we face the sobering truth that local sources of instability and oppression will continue to foster conflicts, small and large, virtually across the globe. Regional crises and conflicts are likely to arise or to escalate unpredictably and on very short notice. This will require that we be able to respond, if necessary, very rapidly and often very far from home, and against hostile forces that are increasingly well-armed with conventional and unconventional capabilities.

No one can predict with certainty the precise course of the war with Iraq. Nonetheless, we are confident that ultimately, we will prevail. In the near future, one way or another, Iraqi forces will leave Kuwait. Similarly, the region's post-crisis political and military relationships remain uncertain, but we are confident of a more favorable post-crisis future there.

Several points will guide our approach. First, the security structure that was in place on August 2 clearly failed. We need a new structure which can maintain the peace. Second, our friends in the Gulf will have to take the lead. They are most directly affected by the conflict there. Third, we have major interests in that part of the world; we must remain engaged to protect those interests, consistent with the wishes of our local friends.

Fourth, we are prepared to increase our presence compared to that of the pre-crisis period. We will want to retain the capability to return forces quickly to the region, should that ever be required. We will want to do more in prepositioning heavy equipment in the region than was the case before, while seeking to minimize any long-term, large U.S. presence on the ground.

While we are confident of success in the Gulf, this war presages very much the type of conflict we are most likely to confront again in this new era—major regional contingencies against foes well-armed with advanced conventional and unconventional weaponry. In addition to Southwest Asia, we have important interests in Europe, Asia, the Pacific, and Central and Latin America. In each of these regions, there are opportunities and potential future threats to American interests. We must configure our policies and our forces to effectively deter, or quickly defeat, such regional threats.

Iraq's forces are considerable, but not entirely unique. There are other regional powers with modern armored forces, sophisticated attack aircraft, and integrated defenses, anti-ship cruise missiles and even modern diesel submarines. The problem will be exacerbated by post-Cold War phenomena—the transfer of Cold War surplus armaments, increasing economic pressure on international arms dealers, and growing indigenous technical capabilities in the Third World. Opponents in regional conflicts are unlikely to possess the across-the-board technical sophistication of the Soviet Union. It will not be uncommon, however, for U.S. forces to face sophisticated systems containing high technology in regional confrontations.

Iraq also illustrates the growing problem of the proliferation of weapons of mass destruction. For the first time in more than 70 years, we face the possibility of the use of chemical weapons and even biological weapons against us in a conflict. The use of such capabilities would require a devastating response. We must respond resolutely not only because of current combat requirements, but also to deter any future use. Only a few years hence, had it continued on its previous path, Iraq could well have credibly threatened a nuclear weapons capability. By the year 2000, we estimate that at least 15 developing nations will have the ability to build and deploy ballistic missiles—eight of those nations either have, or are near to acquiring, nuclear capabilities. Thirty countries will have chemical weapons as well, and 10, we estimate, will be able to deploy biological weapons.

One implication for future regional conflicts emerging from Saddam Hussein's aggression is the need for tighter arms transfer and proliferation controls. Those responsible for violations of such controls should be held strictly accountable. We cannot allow the end of Cold War-level hostilities to open further the door to transfer of unconventional or ballistic systems.

A second implication for future regional conflicts that clearly emerges from the current crisis is the military and political importance of enhancing defenses to counter missile proliferation. Patriot missiles have demonstrated the technical efficacy and strategic importance of missile defenses. This underscores the future importance of developing and deploying a system for Global Protection Against Limited Strikes, or GPALS, to defend against limited missile attacks, whatever their source.

As President Bush said last week, "Thank God that when the SCUDs came, the people of Israel and Saudi Arabia, and our own forces of our coalition had more to protect their lives than some abstract theory of deterrence."

A third implication is the importance of being able to focus intelligence efforts more on specific regional threats in the post-Cold War world. This is not simply a matter of redirecting our intelligence specialists from the study of the Soviet Union to concentration in other areas. We will need, if anything, to continue our close attention to the Soviet Union and the increasingly diverse activity we must understand as we track developments in other regions.

Separate and apart from the broad regional conflicts discussed above, there is another set of demanding threats—low intensity conflicts, including insurgencies, terrorism and drug trafficking. Some of these challenges will require uniquely-tailored military capabilities. Countering such challenges deserves our attention and support. I know this committee has been very active in that area.

The fourth area of change is relations with our key allies. Europe is experiencing fundamental changes. In security terms the challenge from the Warsaw Pact has disintegrated, and the military capability of the Soviet forces remaining in Eastern Europe is rapidly diminishing.

The countries of Eastern Europe are seeking to reweave themselves back into Europe, into the larger political and economic fabric of Europe. A unified Germany stands at the center of the continent. Economic change is also underway, and the U.S. supports European efforts to create a single unified market by 1992.

As the continent works through the political, economic and security challenges of this era, and discovers a new identity, there will be pressures and temptations to question fundamental elements of our trans-Atlantic commitments. These ties must not weaken. The United States shares with its allies in Western Europe a common history and heritage, a shared commitment to freedom and individual rights. The continued strength of NATO remains absolutely critical.

As our concerns shift from the containment of the Soviet Union to possible instability in Europe, a substantial American presence and continued cohesion within the Western alliance remain vital to furthering our interests. A U.S. presence will provide reassurance and stability as the new democracies of Eastern Europe mesh themselves into a large and evolving Europe.

The Soviet Union will retain the largest army in Europe by far, even after its forces are pulled back within its borders and projected conventional force reductions are completed. While its mission may change in this new era, the North Atlantic Alliance remains indispensable to peace and stability in Europe. We expect to share more equitably, with our increasingly-strong allies and partners, the worldwide responsibilities that go with leadership. Operations Desert Shield/Desert Storm is a good model for dealing with major crises.

Fifth, Mr. Chairman, in terms of changes, I want to focus for a moment on changes in the nature of future warfare. For some time, the Soviets have been writing about a military technological revolution that lies just ahead. They liken it to the 1920s and 1930s, when revolutionary breakthroughs such as the blitzkrieg, aircraft carriers, and amphibious operations changed the shape and the nature of warfare. We have already seen the early signs of this revolution in the recent breakthroughs in stealth, in information and in other key technologies.

This revolution will present enormous challenges, not just technologically, but in the development of doctrine and operational concepts. Whatever we do, the Soviets and others will be pursuing this revolution diligently. Revolutionary military capabilities are a reality with which our future strategy must deal. The military technological revolution will have political, as well as military, import, both in our competition with the Soviets and more broadly in the military arena.

The recent changes in the Soviet Union reflect in no small degree the Soviet perception of this military technological revolution. In large part, the Soviet leadership accepted the changes Gorbachev sought because they perceived they could not keep pace in this technological revolution. By the same token, the technological revolution could be used as justification for them to devote more resources to Soviet defense spending, further inhibiting their economic prospects.

The technological edge we have shown in Desert Storm and the promise of breakthroughs tomorrow will have an even greater effect on the calculations of regional powers. Staying ahead in this technological revolution will help shape the future security environment in ways favorable to the United States and will help give us capabilities that we are comfortable employing for defense or deterrence against tomorrow's regional aggressors.

In the first exhilaration of the dramatic changes of 1989, Mr. Chairman and members of the committee, some began to question the nature of U.S. interests. Let me review briefly some broad American purposes that persist even in this changed world that I have described.

The first requirement, of course, is for security, upon which all of our individual and national aspirations depend. We must accept that even after historic Cold War successes we still live in a dangerous world. The Soviet strategic nuclear arsenal is the most dramatic example of our vulnerability, because the U.S.S.R. continues to possess, and indeed has modernized, its capability to destroy this country with little warning. This is not to imply that we believe a bolt-from-the-blue attack is likely, but simply to note our vulnerability.

We must also ensure the safety of our commerce and of our people at home and abroad as they pursue the normal conduct of their daily affairs. Thus, our security requires maintaining capabilities for deterrence and defense across a broad spectrum, from low intensity conflict to strategic nuclear threats.

Second, we seek to promote a world environment in which societies with values similar to our own—political and economic freedom, human rights, and democratic institutions—can flourish. We engage in such efforts because they benefit our friends abroad and also because we know that our own security and prosperity are well-served when we are surrounded by friends and allies who share our fundamental values and aims. We know that we cannot long remain secure and remain in isolation.

The President, in his State-of-the-Union Address, spoke of these universal aspirations of mankind—peace and security, freedom and the rule of law. For 200 years we have served such ends through our example. It is also necessary from time to time to help others in providing for their own security, to join in security alliances, and to promote regional military and political stability through economic and social development and the pursuit of just resolutions of persistent regional conflicts.

And at times, where our interests merit the sacrifice, it will be necessary to use force to deter aggressors or defend freedom. In the Persian Gulf today, in Panama last year, and in our longstanding commitments in Asia, the Pacific and Europe, we have demonstrated our readiness to bear the burdens our interests demand.

The President clearly outlined his view of America's role in the world in the State-of-the-Union Address: "Today, in a rapidly-changing world, American leadership is indispensable. . . . Among the nations of the world, only the United States of America has had both the moral standing and the means to back it up. We are the only nation on this earth that could assemble the forces of peace."

Our experience in the Persian Gulf demonstrates once again the continued importance of American leadership. In my recent discussions with world leaders, I have been struck by how unique a role America plays in furthering the President's vision of a world "where diverse nations are drawn together in common cause," and "aggression will meet collective resistance."

To meet our aims in the changing and increasingly interdependent world around us, we must be ready to show moral and political leadership; to reassure others of our commitment to protect our interests; and, if necessary, to defend. These aims and a close appreciation of the changes and continuities in America's world give rise to the main emphasis on our new defense strategy.

Let me summarize briefly the key elements of the new strategy outlined by the President last August, and then call on my colleague, General Powell.

First, we need to maintain a system of alliances worldwide. Second, to give substance and meaning to those commitments, we want to maintain U.S. forward deployed forces, but at lower levels than the past. Third, we must retain the forces and mobility to respond to crises and to reinforce those forward units. Fourth, we need a robust Navy to control the world's oceans. Fifth, as we reduce forces deliberately, based on continuing reevaluations of the strategic environment, we must retain the national capacity to reconstitute forces, should this be needed. Sixth, we need to preserve a strong strategic offensive and defensive capability.

The most important change reflected in this new strategy is that we are no longer focused on the threat of a Soviet-led, European-wide conflict leading to global war. Our strategy continues to recognize the massive conventional capabilities the Soviets will retain for the foreseeable future. Yet, we judge that the striking political and military changes in the Soviet Union and Eastern Europe, noted earlier, would alter the character of the remaining Soviet threat from the capability to wage global war to a threat to a single region in Europe or elsewhere.

The size and shape of the forces we will need in the future, the new strategy, therefore, shifts its focus to regional threats and related requirements for forward presence and crisis response. We believe we will have sufficient warning of the redevelopment of a Soviet threat of global war, so that we could reconstitute our forces over time, if needed.

Our program of reductions and our budget have thus been based on certain assumptions about the future strategic environment. If trends prove less favorable along the way than we first projected, we may not be able to reduce forces as fast or as far as this 6-year plan proposes.

Remarkably, the reshaping and reducing of our forces now underway is occurring against the backdrop of a major war in the Persian Gulf and worrisome trends in the Soviet Union. I know of no historical precedent for our country making changes of this magnitude under such conditions. This, in itself, should give us pause for caution.

We are at the dawn of a new era, Mr. Chairman. For much of the past 45 years, our primary security concern has been the Soviet threat in Europe. We met that challenge successfully. The threat to Western Europe has diminished. But as the war in the Gulf demonstrates, meeting regional threats can be very demanding, even when we can marshal international cooperation.

To preserve our unique international role, to consolidate the changes in Europe, and to contain and defeat the many possible regional threats we may one day face, we must sustain America's military forces for the new world.

We must remember that military strength of the kind we have relied on in the Persian Gulf cannot be built overnight. Continued investment in America's defense is a must as we look forward with confidence to the years ahead.

[The Annual Report to the President and the Congress will be retained in the committee file.]

[The prepared statement of Secretary Cheney follows:]

PREPARED STATEMENT OF SECRETARY OF DEFENSE DICK CHENEY

Mr. Chairman, members of the committee, thank you for this opportunity to discuss the administration's fiscal year 1992–1993 defense budget request.

As we meet here today, the Defense Department is engaged in two formidable tasks. First, the men and women of our Armed Forces, under the mandate of the United Nations, are engaged in war in the sands of Arabia to liberate Kuwait. Their dedication and professionalism are making us proud.

Yet even as we fight a significant war far from our shores, the Department, in the second task, is restructuring and reducing American military forces to adapt to changes in the strategic environment and to meet the challenge and opportunities of the post-Cold War era. Today is an important step in that process, and I welcome the opportunity to testify before you on these crucial matters.

Underpinning each of these formidable tasks is a new strategy for America's defense. This strategy was first set forth publicly in a speech by President Bush last August 2—the very day Saddam Hussein invaded Kuwait. This is ironic, because the strategy President Bush presented directs attention away from a global war beginning in Europe—the contingency that had necessarily preoccupied America's planners for four decades. The new strategy focuses our efforts instead on regional contingencies and on sustaining the forward military presence in peacetime necessary to deter the outbreak of regional wars.

This new strategy also emphasizes that technological breakthroughs will change military art, even as our Stealth fighters today carry a disproportionate role in the air war. It calls for ballistic missile defense, much as American Patriot units are now engaged almost nightly. It directs resources for increased mobility, as we conduct one of the largest and most rapid deployments in our history. And it recognizes potential new roles for us, for our allies and for the Soviets, even as an unprecedented international effort has been forged.

But it is also a strategy that recognizes the importance of continuing historic roles for America's defense, as our Army, Navy, Air Force, and Marines prepare for one of the largest land assaults of modern times. It cites the continued importance of the quality of our Armed Forces and the critical need to maintain and modernize our strategic capabilities. And it warns of the continued need for caution in an uncertain world, the need to be ready to rebuild, even as we plan to reduce dramatically over the next several years.

Today I would like to discuss this new strategy, the elements that underlie it, and its implications for our defense budget. For an effective strategy for America's defense requires first a sound understanding of the challenges and opportunities ahead of us, a clear sense of our interests and goals, and an honest appreciation of our strengths and characteristics as a Nation. On these sound bases the President has built America's defense strategy for the 1990s, a strategy fully reflected in the force structures and programs contained in the defense budget recently submitted to the Congress.

THREATS AND OPPORTUNITIES

The remarkable changes of 1989 in Europe and the Soviet Union brought to the fore the need to reexamine the strategy of containment that had guided us from early post-World War II days. But there are other changes afoot, as well, partly as a consequence of the end of the Cold War, and partly from other historical trends. These have interlocking effects on our purposes as a Nation and on the resources we will devote to our defense. Let me discuss briefly problems and opportunities presented in four categories:

—Changes in the Soviet Union and Eastern Europe.
—Changes in future regional threats.
—Changes in relations with our allies.
—Changes in the nature of future warfare.

Changes in the Soviet Union and Eastern Europe

The past 2 years have seen extraordinary, historic changes in the strategic environment. The revolutionary change in the nations of Eastern Europe has been more wide-ranging and sweeping than anything we have seen in the last 40 years. Noncommunists now lead each of the former non-Soviet Warsaw Pact states. Germany has been unified in NATO. The Soviet Union has agreed to withdraw its troops from Czechoslovakia, Hungary, and Germany and is unilaterally reducing its general purpose forces at home. The Warsaw Pact is set to be dissolved April 1. In short, the West has achieved a great strategic success.

The Soviets have played a responsible and helpful role in many of these developments. Communism collapsed in Eastern Europe and is under siege elsewhere because it failed to nurture the spirit and innovation of its individual citizens. Democracy and free market economies have proven more durable, more successful and more responsive to the aspirations of the majority of mankind. But the Soviets helped change along and in the past 2 years took some steps toward reform at home as well. Significantly, the Soviets have also joined with the overwhelming majority of the international community in supporting 12 UN Security Council resolutions condemning Iraq's wanton aggression in the Persian Gulf. In this sense it is now common to say, at last, "the Cold War is over."

Last fall, during trips to Poland and the Soviet Union, I witnessed some of these advances first hand. In Moscow, I addressed a joint meeting of the Defense and State Security and International Affairs committees of the Supreme Soviet, and this experience in particular left me with a sense of the great changes taking place in the Soviet Union.

But the moves toward democracy and demilitarization of the Soviet Union that we all welcomed now appear to be in doubt. Recent, worrisome events raise questions about the prospects for needed economic and political reform and the Soviet Union's future course.

The economic situation in the Soviet Union today is as bleak as it has been since the end of World War II. In October 1990, just about the time I visited the Soviet Union, the central government rejected the Shatalin plan, the only economic program that had any real prospect to reform the Soviet economy. The Soviet government has taken other steps that make any significant improvement in the Soviet economy less likely, including reasserting the priority of state orders in the economy, authorizing the KGB to search business enterprises for economic data, and otherwise countering the movement toward free markets and prices. These actions are certain to trouble western businessmen contemplating investment in the Soviet Union. In short, the Soviet Central Government has for now abandoned economic reform and in turn has been abandoned by the most prominent economic reformers, many of whom are now working with the government of the Russian Republic.

As a result of the center's policies, the Soviet economy is collapsing. There only remains the question of how rapidly the shrinkage is occurring. Estimates for 1990 range from an official Soviet estimate of some 2 percent reduction in Soviet economic activity to at least a 10 percent reduction in the 12 months ending in February 1991. Many experts anticipate that 1991 will see a further contraction of the Soviet economy.

Mr. Gorbachev's success in the eyes of many hinged upon his ability to deliver economic reform, to move the Soviet Union into the modern era so that it could compete with the West. Success depended first and foremost upon his ability to dismantle the old structures that clearly did not work, and put new structures in their place. In my view, to date, he has clearly not yet achieved that transformation. Given this failure, we have to anticipate that there will continue to be economic decline and increased prospects for significant unrest. If the government pursues additional anti-reform steps, Moscow will find itself locked in a vicious cycle. It is hard to discern, at this point, a strategy at the center for dealing with these problems or regenerating a process of reform.

Political reform in the Soviet Union is also under attack. Leading liberal political figures have left the government, most notably former Foreign Minister Shevardnadze, whose resignation speech warned of an impending dictatorship. Shortly thereafter, Gorbachev resorted to and sanctioned a crackdown on the freely elected governments in the Baltic states. There has been a reversal of progress in human rights and a broad campaign attacking press freedoms. Political conflict is worsening. Rather than moving toward greater openness to resolve the underlying problems, Gorbachev appears ready to rely on the security services and the military and their use of force to maintain order inside the Soviet Union. He has issued a decree establishing joint Interior Ministry-Army patrols. There is now a widespread consensus among Soviet observers that the Central Government is increasingly influenced by the military and the security services, as well as the Communist Party bureaucracy.

In the absence of ongoing reform there is no prospect for a permanent transformation in U.S.-Soviet relations. Experience shows that ultimately U.S.-Soviet relations are driven by how the Soviet Union governs itself. Except at the margins, long-term improvement depends on the democratization and demilitarization of Soviet society. The failure of reform would not necessarily mean a return to the worst days of the Cold War, but it would prevent movement to thoroughgoing, across the board cooperation with the Soviet Union.

Reform need not fail. Our President has said many times that we want the process of reform in the Soviet Union to succeed. We still hope that it will be successful, and the Central Government, we believe, may still be able to take steps to return to the path of reform.

But what do these conflicting trends mean for our long-term defense requirements? Five implications must be weighed.

First, the Warsaw Pact is dead as a military organization. I do not see any possibility of resurrecting it. Even though the Soviet military will remain, by a wide margin, the largest armed force on the continent, the threat of a short-warning, global war starting in Europe is now less likely than at any time in the last 45 years. The U.S.S.R. will, very likely, continue withdrawing forces from Eastern Europe. The withdrawals from Hungary and Czechoslovakia are well on their way to completion; and, despite some recent difficulties, we anticipate that withdrawal from Germany and Poland will be completed some time thereafter.

Second, the Soviet ability to project conventional power beyond its borders will continue to decline, whether that decline is part of a broad strategy of improving relations with the West or is simply an unintended effect of the continued economic collapse of the Soviet Union. For the moment there does not appear to be a constituency for a revanchist policy toward Europe or a forward policy in the Third World. More generally, as many Soviets have noted, the Soviet Union has a sick economy, and it is getting sicker. The military is not able to insulate itself completely from this broader social illness, and as a consequence some of its capabilities inevitably will be degraded. Thus, I think overall the Soviets are going to find it increasingly difficult to project power beyond their borders, and that obviously reduces the threat we have been faced with for the past 40 years.

Third, there is enormous uncertainty about developments inside the Soviet Union, and this should be reflected in our planning. Absent a return to the course of reform, I believe the Soviet decline will continue. Growing unrest and violence in the Soviet Union would threaten its neighbors in Central and Eastern Europe since some of the turmoil may well spill over the borders of the Soviet Union. This unrest will be particularly troubling to the Soviet Union's neighbors since, as former Foreign Minister Shevardnadze said not long ago:

"[N]o one can calculate the consequences of a social explosion capable of igniting not only befogged minds but also the giant stockpiles of nuclear and chemical weapons and nuclear power stations and the zones already weakened by environmental and natural disasters and regions shaken by interethnic strife."

As the situation deteriorates in the Soviet Union, anticommunist democrats and ethnic nationalists could well take to the streets in protest or flee. Large flows of refugees to Europe are possible. This will only heighten the concerns of Eastern European nations, as they seek solutions to their longer-term security needs.

Fourth, and a key point, the Soviets not only retain significant strategic capability but are modernizing it virtually across the board. It is expected that Soviet nuclear forces will be fully modernized by the mid-1990s, including Typhoon/Delta IV submarines, SS-24 and SS-25 missiles and follow-ons to each, and a new highly accurate version of the SS-18 missile. They will also modernize their air-breathing forces with the ALCM-carrying Bear-H, Blackjack, and Backfire bombers, among other improvements. In all, we see five or six new Soviet long-range ballistic missiles under development. The U.S.S.R also continues to modernize its strategic defenses. While we seek to capitalize on the significant reductions in conventional capabilities, we must recognize the continued importance of maintaining robust strategic offensive and defensive capabilities.

Fifth, the prospects for arms control are in doubt. We have serious, unresolved differences with Moscow over the agreement to reduce Conventional Forces in Europe (CFE). There is still, at this time, no resolution on START, although at various times there has been reason to believe we were close to finishing a START agreement. These setbacks in arms control demonstrate the spillover effects of Soviet domestic unrest and the resurgent role of the military. Nevertheless, we remain hopeful that we may yet conclude meaningful arms control agreements with the Soviets.

Changes in Future Regional Threats

The cooling of the superpower rivalry has implications for the regional conflicts we confront as well. The containment strategy dictated that part of our regional interests derived directly from Moscow's expansionist strategy, and our own efforts to counter that expansionism. U.S.-Soviet rivalry did not create U.S. regional interests but gave them a special context and urgency. A new era holds the prospect for treating regional issues independent of the East-West context.

A true demise to the Cold War therefore promises many positive effects on regional conflicts, including greater superpower cooperation, with the most dramatic example to date being the Soviet support in the United Nations against Iraq. The cooling of superpower rivalry decreases the chances that a regional conflict will escalate into global war—a worrisome concern throughout the Cold War. This shift drains many regional insurgencies of their most common source of military and economic support, and undercuts adherents to Communist ideological fervor. On the other hand, there is a risk that the end of the bipolar world could unleash local, destructive forces that were previously kept in check. For example, there is some thought that Saddam Hussein saw the end of the Cold War as an opportunity to pursue his own expansionism.

Whatever the positive consequences of Soviet "new thinking" on foreign affairs, we face the sobering truth that local sources of instability and oppression will continue to foster conflicts small and large virtually across the globe. The Gulf conflict has illustrated once again that these regional crises and conflicts are likely to arise, or to escalate, unpredictably and on very short notice. This will require that we be able to respond if necessary, very rapidly, often very far from home, and against hostile forces that are increasingly well-armed with conventional and unconventional capabilities.

No one can predict with certainty the precise course of the war with Iraq. Nonetheless, we are confident that we will ultimately prevail. In the near future, one way or another, Iraqi forces will leave Kuwait. Similarly, the region's post-crisis political and military relationships remain uncertain, but we are confident of a more favorable post-crisis future there. Several points will guide our approach. First, the security structure that was in place on August 2 failed; we need a new structure which can maintain the peace. Second, our friends in the Gulf will have to take the lead; they are most directly affected by conflict there. Third, we have major interests in that part of the world; we must remain engaged to protect those interests, consistent with the wishes of our local friends. Fourth, we are prepared to increase our presence compared to the pre-crisis period. We will want to have the capability to return forces quickly to the region should that ever be required. We will want to do much more prepositioning of heavy equipment in the region than was the case before, while seeking to minimize any long-term, large U.S. presence.

But while we are confident of success in the Gulf, this war presages very much the type of conflict we are most likely to confront again in this new era—major regional contingencies against foes well-armed with advanced conventional and unconventional weaponry. In addition to Southwest Asia, we have important interests in Europe, Asia, the Pacific and Central and Latin America. In each of these regions there are opportunities and potential future threats to our interests. We must configure our policies and our forces to effectively deter, or quickly defeat, such future regional threats.

Iraq's forces are considerable, but not entirely unique: there are other regional powers with modern armored forces, sophisticated attack aircraft and integrated air defenses, anti-ship cruise missiles, and even modern diesel submarines. The problem will be exacerbated by post-Cold War phenomenons: transfers of Cold War surplus armaments, increasing economic pressures on international arms dealers, and growing indigenous technical capabilities in the Third World. Opponents in regional conflicts are unlikely to possess the across-the-board technical sophistication of the U.S.S.R. It will not be uncommon, however, for U.S. forces to face sophisticated systems containing high technology in regional confrontations.

Iraq also illustrates the growing problem of the proliferation of weapons of mass destruction. For the first time in more than 70 years, we face the possibility of the use of chemical and biological weapons against us in a conflict. The use of such capabilities would require a devastating response. We must respond resolutely not only because of current combat requirements, but also to deter future use. Only a few years hence, had it continued on its same path, Iraq could well have credibly threatened a nuclear weapons capability as well. By the year 2000, it is estimated that at least 15 developing nations will have the ability to build ballistic missiles—eight of which either have or are near to acquiring nuclear capabilities. Thirty countries will have chemical weapons, and 10 will be able to deploy biological weapons as well.

One implication for future regional conflicts emerging from Hussein's aggression is the need for tighter arms transfer and proliferation controls. Those responsible for violations of such control should be held strictly accountable. We cannot allow the end of cold-war-level hostilities to open further the doors to transfer of unconventional or ballistic systems.

A second implication for future regional conflicts that clearly emerges from the current crisis is the military and political importance of enhancing defenses to counter missile proliferation. Patriot missiles have demonstrated the technical efficacy and strategic importance of missile defenses. This underscores the future importance of developing and deploying a system for Global Protection Against Limited Strikes (GPALS) to defend against limited missile attacks—whatever their source. As President Bush said last week, "Thank God that when the Scuds came—the people of Israel and Saudi Arabia, and the brave forces of our coalition had more to protect their lives than some abstract theory of deterrence."

A third implication is the importance of being able to focus intelligence efforts more on specific regional threats in the post-Cold War world. This is not simply a matter of redirecting our intelligence specialists from the study of the Soviet Union to concentration on other areas. We will need, if anything, to continue our close attention to the Soviet Union and the increasingly diverse activity we must understand as we also track developments in other regions.

Separate and apart from the broad regional conflicts discussed above, there is another set of demanding threats. They are low intensity conflicts, including insurgencies, terrorism, and drug trafficking. Some of these challenges require uniquely tailored military capabilities. Countering such challenges deserves our attention and support.

Changes in Relations With Our Allies

The third area of change is our relations with key allies. Europe is experiencing fundamental changes. In security terms, the challenge from the Warsaw Pact has disintegrated, and the military capability of the Soviet forces that remain in Eastern Europe is diminishing. The countries of Eastern Europe are seeking to reweave themselves back into the larger political and economic fabric of Europe. A unified Germany stands at the center of the continent. Economic change is also underway: the United States supports European efforts to create a single unified market by 1992. As the continent works through the political, economic and security challenges of this new era, and discovers a new identity, there will be pressures and temptations to question fundamental elements of our trans-Atlantic commitments. These ties must not weaken: the United States shares with its allies in Western Europe a common history and heritage—a shared commitment to freedom and individual rights. The continued strength of NATO remains critical.

As our concerns shift from the containment of the Soviet Union to possible instability in Europe, a substantial American presence and continued cohesion within the Western alliance remain vital to furthering our interests. A U.S. presence will provide reassurance and stability as the new democracies of Eastern Europe mesh themselves into a larger and evolving Europe. The Soviet Union will retain the largest army in Europe by far even after its forces are pulled back within its borders and projected conventional force reductions are completed. While its mission may be changed in this new era, the North Atlantic Alliance remains indispensable to peace and stability in Europe. To keep the Alliance strong and viable in a new environment, we must recognize that there are important tasks beyond the changed—but still important—task to balance and deter Soviet military power. In this regard, it is important to note that both our new friends in Eastern Europe and the leaders of the Soviet Union have made it clear to me in my visits that they consider a continued U.S. presence in Europe and a strong NATO to be essential to overall European stability.

We expect to share more equitably with our increasingly strong allies and partners the worldwide responsibilities that go with leadership. Operation Desert Shield/Storm is a good model for dealing with future crises.

Changes in the Nature of Future Warfare

For some time the Soviets have been writing about a military technological revolution that lies just ahead. They liken it to the 1920s and 1930s, when revolutionary breakthroughs—such as the blitzkrieg, aircraft carriers, and amphibious operations—changed the shape and nature of warfare. We have already seen the early signs of this revolution in the recent breakthroughs in Stealth, information, and other key technologies. This revolution will present enormous challenges, not just technologically, but in the development of doctrine and operational concepts. Whatever we do, the Soviets and others will be pursuing this revolution diligently. Revolutionary military capabilities are a reality with which our future strategy must deal.

The military technological revolution will have political, as well as military import, both in our competition with the Soviets and more broadly in the military arena. The recent changes in the Soviet Union reflect in no small degree the Soviet perception of this military technological revolution. In large part the Soviet leadership accepted the changes Gorbachev sought because they perceived they could not keep pace in this technological revolution. By the same token, the technological revolution could be used as justification to devote more resources to Soviet defense spending, further inhibiting economic prospects. The technological edge we have shown in Desert Storm and the promise of breakthroughs tomorrow will have an even greater effect on the calculations of regional powers. Staying ahead in this technical revolution will help shape the future security environment in ways favorable to us and will help give us capabilities that we are comfortable employing for deterrence or defense against tomorrow's regional aggressors.

ENDURING U.S. SECURITY OBJECTIVES

In the first exhilaration of the dramatic changes of 1989, some began to question the nature of enduring U.S. interests. Let me review briefly some broad American purposes that persist—even in this changed world I have described.

Security. Security is the first requirement upon which all our individual and national aspirations depend. We must accept that even after historic Cold War successes we live in a dangerous world. The Soviet strategic nuclear arsenal is the most dramatic example of our vulnerability because the U.S.S.R. continues to possess, and indeed has a modernized capability, to destroy this country with little warning. This is not to imply that we believe a bolt from the blue attack is likely, but to note our vulnerability. We must also ensure the safety of our commerce and of our people at home and abroad as they pursue the normal conduct of their daily affairs. Thus our security requires maintaining capabilities for deterrence and defense across the broad spectrum, from low intensity threats and noncombatant evacuation efforts to strategic nuclear threats.

Democracy and Prosperity. Second, we seek to promote a world environment in which societies with values similar to our own—political and economic freedom, human rights, and democratic institutions—can flourish. We engage in such efforts because they benefit our friends abroad, but also because we know our own security and prosperity are well-served when we are surrounded by friends and allies who share our fundamental values and aims. We know we cannot long remain secure in isolation.

The President, in his State of the Union address, spoke of these "universal aspirations of mankind: peace and security, freedom, and the rule of law." For 200 years we have served such ends through our example. But it is also necessary from time to time to help others in providing for their own security, to join in security alliances, and to promote regional military and political stability through economic and social development and the pursuit of just resolutions of persistent regional conflicts. And, at times, where our interests merit the sacrifice, it will be necessary to use force to deter aggressors or defend freedom. In the Persian Gulf today, in Panama last year, and in our longstanding commitments in Asia, the Pacific and Europe we have demonstrated our readiness to bear the burdens our interests demand.

Leadership. The President clearly outlined his view of America's role in the world in the State of the Union address: "Today, in a rapidly changing world, American leadership is indispensable. . . . Among the nations of the world, only the United States of America has had both the moral standing and the means to back it up. We are the only nation on this earth that could assemble the forces of peace." Our experience in the Persian Gulf demonstrates once again the continued importance of American leadership. In my recent discussions with world leaders, I have been struck by how unique a role America plays in furthering the President's vision of a world "where diverse nations are drawn together in common cause," and "aggression will meet collective resistance."

THE NEW DEFENSE STRATEGY

To meet our aims in the changing and increasingly interdependent world around us, we must be ready to show moral and political leadership; to reassure others of our commitment to protect our interests; and, if necessary, to respond to threats resolutely with forces for deterrence or defense. These aims and a close appreciation of the changes and continuities in today's world give rise to the main emphases of our new defense strategy.

Let me summarize briefly the key elements of the new defense strategy outlined by the President last August. First, we need to maintain a system of alliances worldwide. Second, to give substance and meaning to those commitments, we want to *maintain U.S. forward deployed forces,* although at lower levels than in the past.

Third, we must retain the forces and mobility to respond to crises and to reinforce those forward units. Fourth, we need a robust Navy to control the world's oceans. Fifth, as we reduce forces deliberately—based on continuing reevaluations of the strategic environment, we must retain the national capacity to reconstitute forces, should this be needed. Sixth, we need to preserve a strong strategic offensive and defensive capability.

The most important change reflected in this new strategy is that we no longer are focused on the threat of a Soviet-led, European-wide conflict leading to global war. Our strategy continues to recognize the massive conventional capabilities the Soviets will retain for the foreseeable future. Yet, we judge that the striking political and military changes in the U.S.S.R. and Eastern Europe noted earlier would alter the character of the remaining Soviet threat from the capability to wage global war to a threat to a single region in Europe or elsewhere. To size and shape the forces we will need in the future, the new strategy therefore shifts its focus to regional threats and the related requirements for forward presence and crisis response. We believe we will have sufficient warning of the redevelopment of a Soviet threat of global war, so that we could reconstitute forces over time if needed.

Our program of reductions and our budget have thus been based on certain assumptions about the future strategic environment. If trends prove less favorable along the way than we first projected, we may not be able to reduce forces as fast or as far as we have planned. Remarkably, the reshaping and reducing of our forces now underway is occurring against the backdrop of a major war in the Persian Gulf and worrisome trends in the Soviet Union. I know of no historical precedent for our country making changes of this magnitude under such conditions. This in itself is cause for due caution.

Strategic Deterrence

I have earlier noted that the Soviets continue to modernize their strategic nuclear arsenal at a pace that seems out of step with their positive actions in other spheres. Given all that is at stake, this is an area in which we can ill-afford to accept much risk. America must continue to maintain a diverse mix of survivable and highly capable offensive nuclear forces, as well as supporting command and control assets. At the same time as we modernize, we have planned to scale back our strategic forces in accordance with our expectations of a START agreement covering such forces. Negotiations with the Soviets are continuing intensively but have not yet yielded success in negotiation. We hope to be able to complete a treaty in the near future, as we assumed when we formulated our currently planned reductions.

Future Secretaries of Defense are going to have to be able to deploy defenses against ballistic missiles—whether against the kind of theater threat we face today against SCUDs, or the far more sophisticated threats we anticipate in the future. We will pursue a defensive system for global protection against limited ballistic missile strikes—whatever their source.

Forward Presence

Our new strategy emphasizes the importance of U.S. presence abroad, albeit at reduced levels. This is one of the key roles on which we will size our forces. The success of our historic strategy of forward presence should be carefully recognized. We should be slow to make destabilizing changes. Recent attention has focussed on our plans to reduce our levels of forward deployed forces, especially in Europe under CFE, but also in Asia under last year's strategy initiative.

Despite its historic success, the great importance of maintaining a forward military presence may not be widely appreciated. Our presence sends an unmistakable signal to allies and adversaries alike of our commitment to be engaged in a region. It supports our aim of continuing to play a leadership role in international events. In this era of shifting regional power balances, our forward military presence supports our aim of maintaining the stability that lets other nations flourish, by preventing the emergence of dangerous power vacuums or imbalances and by staving off regional arms races. Forward forces also provide an initial capability to respond rapidly to regional crises or contingencies.

Presence can take many forms. The stationing of forces in selected forward bases is perhaps the most tangible demonstration of U.S. commitment in key areas. Periodic deployments, rotations, exercises, and visits provide a flexible operational presence, and may loom larger than before as a way of maintaining our future forward presence. Not least, we must maintain the infrastructure and logistics arrangements that are so essential to being-able to sustain a forward presence.

While we will reduce our forward presence, there are risks in reducing too far or too fast. These risks regarding reduced forward presence are sometimes likened to thin ice: you don't know for sure how much is too little, until you have fallen through—and then the consequences can be dire and long-lasting. To keep this risk acceptable, reductions in presence to levels near the minimum acceptable should be gradual and part of a carefully developed and agreed long-term plan. Our phased plan for reductions in Asia, including the agreement with our allies on a 10-percent reduction in our forces there by fiscal year 1992, exemplify this commitment to keeping our forward presence as trim as possible. Let me reemphasize, however, that we cannot withdraw from the world. Our forward military presence will remain a key factor in our overall national defense strategy and in the strategies at our allies as well.

Crisis Response

The need to respond to regional crises is one of the key elements of our new strategy and plays a significant role in how we size our Active and Reserve forces. We have already noted—and we see today—how important regional threats can be to our interests. Under conditions pertaining during our policy of containment, safety demanded that we assume that a major regional conflict involving superpower interests might not stay limited to that region, but could well escalate to a global conflict. This made any single-regional conflict a "lesser-included case" or a potential precursor to a global war scenario. In contrast, we now focus on a disparate array of possible regional conflicts that we believe are more likely to remain localized.

The regional contingencies we might face are many and varied, including differences in terrain, climate, distance from the United States, nature of threat forces, potential for outside involvement, and level of infrastructure and host nation support. One trait most of them share, however, is that they will arise on very short notice, and therefore require a highly responsive military capability. As we have learned again most clearly in Operation Desert Shield/Desert Storm, a regional crisis can also mean mounting a very large military operation. Furthermore, the proliferating unconventional threats of ballistic missiles and chemical, biological or even nuclear weapons, plus the potentially confounding threat of terrorism, raise the risks our forces face if deployed to respond to such crises, and raise the stakes involved in forestalling or containing them.

Finally, we must recognize that when the United States is engaged (perhaps in concert with others) in responding to a substantial regional crisis, potential aggressors in other areas may be tempted to capitalize on our preoccupation. The requirements of both deterrence and defense dictate that we not reduce forces to a level that would leave ourselves overly vulnerable to this threat.

Force Reconstitution

The dramatic changes of 1989 and 1990 in Eastern Europe and the Soviet Union allow us to plan on dramatic increases in the time available to meet any renewed threat of a massive, theater-wide attack on Europe that could lead to global war. Such long warning of a renewed global threat enables us to reduce our forces in being to levels sufficient to meet the regional threats which are now our focus. This allows us to reduce our forces now, so long as we are prepared to build, as the President has said, "wholly new forces" should the need to counter a global threat reemerge.

Timely reconstitution requires that we take care to preserve the longest-lead elements of our security. This includes particularly our alliance structures, forward deployments and access, and the technological and doctrinal edge that comes from vigorous innovation and development. This also includes particular weapons systems or capabilities that take a long time to rebuild, such as large weapons platforms that require long production or recommission times, and highly skilled personnel, like unit commanders and specialized technicians. We can benefit from our defense investments over the last decade by retaining some equipment of disestablished units in laid-up status, and tapping the pool of trained personnel exiting units but still accessible in reserve manpower categories. We also will retain some units in very low-strength, cadre-type status. But our emphasis has been on removing from the force those units needed for a resurgent global threat that could be reconstituted in the expected time available. Moreover, our reconstitution concept is not necessarily simply to recreate the same forces that we "deconstituted." Rather, we would consider what new forces were most needed for a specific reemerging threat.

We recognize that to take major reconstitution measures would require major political decisions, potentially on the basis of early strategic warning indications. We will therefore give increased attention to the intelligence and warning processes that would support such decision making, as well as measures that will provide an early response while minimizing undue escalatory pressures.

Following a strategy of reconstitution prudently accepts some risk during a time of reduced likelihood of global conflict, to permit adequate attention to other concerns. These include capabilities for the more likely regional threats we face now, plus the long-term technological and doctrinal innovation which may be decisive against future threats—including those in the further future which we cannot now even foresee.

OPERATION DESERT SHIELD/DESERT STORM

The 1990 budget summit agreement specified that incremental costs associated with Operation Desert Shield are to be treated as emergency funding requirements, not subject to the defense caps in the agreement. The President's fiscal year 1992-1993 defense request and its projected long-term outlays do not reflect those costs, including DOD's eventual requirements as a result of Desert Shield and Desert Storm. It is possible that some of the program decisions in the fiscal year 1992-1993 request will have to be adjusted in the aftermath of the Gulf crisis.

Fiscal year 1990 incremental costs associated with Desert Shield and increased fuel prices were covered by shifts in previously appropriated DOD funds ($800 million) and by a supplemental appropriation ($2.1 billion). For fiscal year 1991, the President is requesting a supplemental appropriation which, when added to contributions from our allies, could cover the Desert Shield/Storm costs that we project for the foreseeable future. I urge timely passage of this supplemental request.

Pending passage of our supplemental request, U.S. forces engaged in and supporting combat operations in the Middle East must have the support they need, and our servicemembers must receive their pay and allowances. To that end, I have authorized the obligation of funds in excess of available appropriations, in accordance with section 3732 of the Revised Statutes, commonly called the Feed and Forage Act. The incurring of deficiencies has been authorized for clothing, subsistence, forage, fuel, quarters, transportation, and medical and hospital supplies. Additionally, pursuant to section 2201 of Title 10 and in view of the President's determination of the necessity to continue on active duty more members of the Armed Forces than were provided for in DOD appropriations, I have authorized the incurring of deficiencies for the costs of such personnel.

IMPLEMENTING THE NEW STRATEGY

The administration's fiscal year 1992-1993 budget request is the first installment of the Defense Department's comprehensive fiscal year 1992-1997 multiyear defense program. That program is the result of the Department's rigorous analysis of the capabilities needed to support the new U.S. defense strategy. The overall goal is to streamline and restructure America's Armed Forces, in order to provide those needed capabilities within projected fiscal constraints. In essence, U.S. forces are becoming smaller, but still fully capable of securing our Nation and its global interests.

The fiscal year 1992-1993 DOD budget reflects priorities that flow directly from our new strategy. Rapid response to global crises requires sustainment of the current high quality and superior capabilities of U.S. forces, especially as their total size is reduced. This in turn, requires continued support for the high quality of U.S. military personnel, vigorous defense research and development, the fielding of advanced military systems as soon as necessary, and the preservation of critical elements of America's defense industrial and technology base. These priorities also enable DOD to reconstitute a larger military posture, if needed.

Chart # 1

DEFENSE BUDGET PRIORITIES

- People
- Power Projection/Mobility
- Force Quality
- Readiness
- Strategic Offensive and Defensive Forces
- Technological Advantage
- Efficient Acquisition
- Streamlined Infrastructure

Other priorities include the ability to project military power rapidly to areas of U.S. strategic interest. The new strategy also requires that U.S. forces sustain their traditional high readiness. To ensure credible nuclear deterrence, DOD will maintain strong offensive nuclear forces. We will also pursue strategic and theater defenses to provide global protection against limited ballistic missile strikes—regardless of their source.

DOD budget proposals also reflect my commitment to continue to strengthen defense management and streamline the U.S. defense infrastructure, to extract the greatest security value from increasingly scarce resources. Special attention is going toward efficient acquisition. The goals include funding sustainable production rates for essential programs and terminating lower priority programs.

FISCAL YEAR 1992–1993 DEFENSE BUDGET REQUEST

Budget Topline and Trends

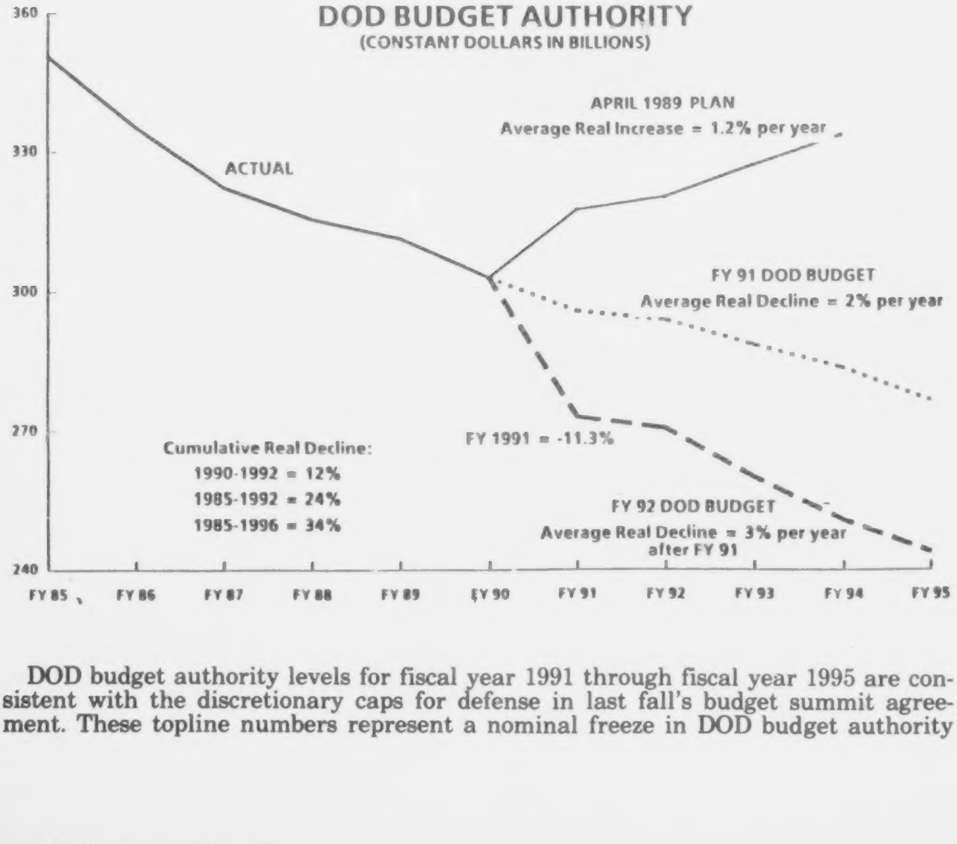
The fiscal year 1992 DOD request is $278.3 billion in budget authority and $283.0 billion in outlays. Adjusting for inflation, this means a real decline in DOD budget authority of 1 percent below fiscal year 1991, 12 percent below fiscal year 1990, and 24 percent below fiscal year 1985. In fiscal year 1996, the cumulative real decline since fiscal year 1985 will reach 34 percent.

Chart # 2

NATIONAL DEFENSE TOPLINE
(Current $ Billions)

	1991	1992	1993	1994	1995	1996
BUDGET AUTHORITY						
DoD 051	**273.0**	**278.3**	**277.9**	**278.2**	**280.7**	**282.6**
DoE & Other	12.6	12.5	13.0	13.7	14.4	15.1
TOTAL 050	285.6	290.8	290.9	291.9	295.1	297.8
OUTLAYS						
DoD 051	**287.5**	**283.0**	**279.1**	**273.3**	**274.6**	**278.5**
DoE & Other	11.5	12.2	12.8	13.4	14.0	14.7
TOTAL 050	298.9	295.2	292.0	286.7	288.6	293.2

Chart # 3



DOD budget authority levels for fiscal year 1991 through fiscal year 1995 are consistent with the discretionary caps for defense in last fall's budget summit agreement. These topline numbers represent a nominal freeze in DOD budget authority at about $278 billion, starting in fiscal year 1992. Total DOD budget authority for fiscal year 1991 through fiscal year 1995 will be $131 billion less than estimated in the President's January 1990 request. After an 11.3 percent real decline in fiscal year 1991, DOD budget authority will decline, in real terms, an average 3 percent per year through fiscal year 1996.

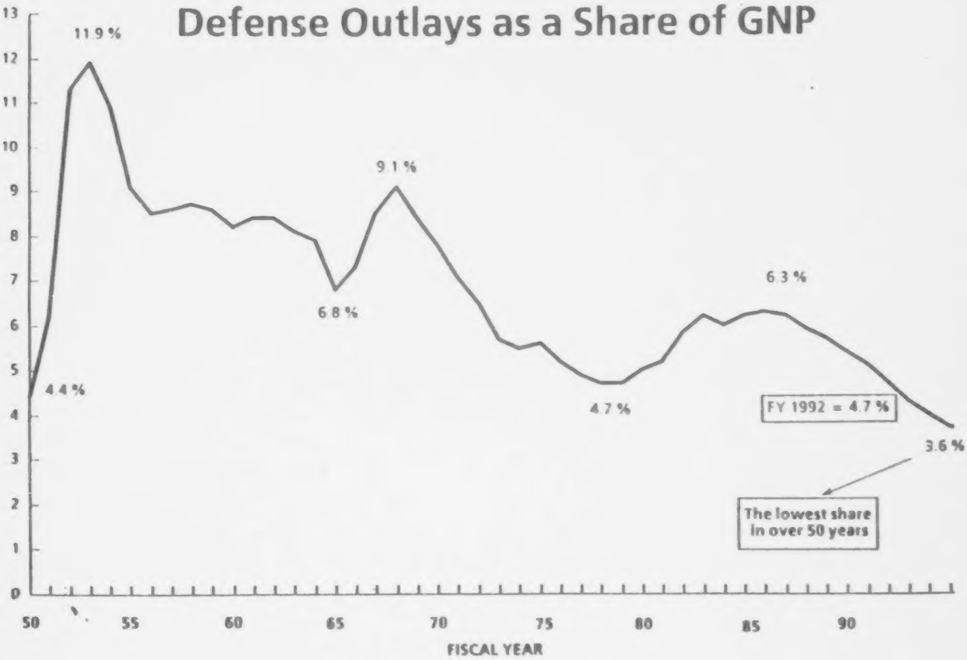
Chart # 4

DoD BUDGET AUTHORITY
($ in Billions)

	1991	1992	1993	1994	1995	Cumulative 1991-1995
President's Budget January 1990	295.1	300.0	304.4	308.0	311.8	1,519.3
Real Program Decline	-2.6%	-2.0%	-2.0%	-2.0%	-2.0%	-10.6%
Dollar Reduction	-22.1	-21.7	-26.5	-29.8	-31.1	-131.2
President's Budget February 1991	273.0	278.3	277.9	278.2	280.7	1,388.1
Real Program Decline	-11.3%	-0.9%	-3.9%	-3.6%	-2.7%	-22.4%

DOD outlays as a share of America's Gross National Product (GNP) are expected to fall to 3.6 percent in fiscal year 1996, the lowest level since before World War II and well below the 4.7 percent reached during the defense decline of the 1970s.

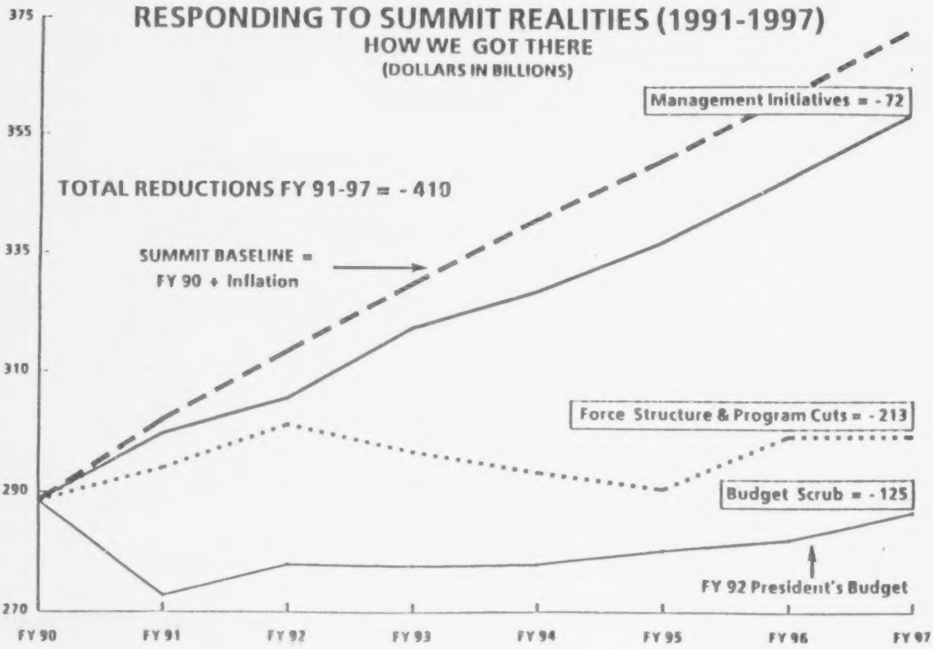
Chart # 5



Defense Outlays as a Share of GNP

The administration's fiscal year 1992-1993 budget request is the result of many months of intense scrutiny. We have come down to the budget summit's lower defense levels through a combination of cuts in force structure and major procurement programs, management initiatives, and numerous reductions made during a rigorous budget review this past fall.

Chart # 6



Force Structure

The fiscal year 1992-1993 request includes reductions in the U.S. force structure that continue a prudently phased plan for reaching the force targets established for the new strategy and threat projections. Our fiscal year 1995 forces will approximate those targets and be well below fiscal year 1990 levels.

Chart # 7

FORCE STRUCTURE

	FY 1990	FY 1995
Army Divisions	28 (18 active)	18 (12 active)
Aircraft Carriers	13	12
Carrier Air Wings	15 (13 active)	13 (11 active)
Battle Force Ships	545	451
Tactical Fighter Wings	36 (24 active)	26 (15 active)
Strategic Bombers	268	181

U.S. *strategic* forces are programmed to be scaled back in accordance with expectations regarding arms reductions agreements and to enable DOD to maintain credible strategic deterrence at the least cost. Retirement of the Minuteman II force will begin in fiscal year 1992. Retirements of submarines with the aging Poseidon missile are to be accelerated. During the 1990s, the current mix of 34 Poseidon and Trident boats will be reduced to a force of 18 Trident submarines carrying Trident I (C-4) and Trident II (D-5) missiles. Strategic bombers will decrease from 268 in fiscal year 1990 to 171 in fiscal year 1993, as older B-52s are retired and FB-111s are transferred to tactical use.

U.S. *conventional* forces will be restructured so that they best support the new strategy. For crisis response, we must be able to deploy to regions of U.S. interest sufficient forces with the capabilities needed to counter a wide variety of contingencies. Thus the restructured force will include a high airlift and sealift capacity, substantial and highly effective maritime and amphibious forces, a full and sophisticated array of combat aircraft, both heavy and light Army divisions, and appropriate special operations forces.

Because serious contingencies can arise quickly, a timely U.S. response would require mostly active forces. Reserve forces would initially provide airlift, sealift, and some other vital support for deploying forces. When longer preparation allowed, reserve components could provide additional support, plus combat units that would be needed for larger or prolonged deployments.

In working out these roles for the new strategy, DOD will continue its Total Force Policy to ensure the optimal utilization of its active and reserve components. That Policy will be driven by this principle: The composition of our total force must be derived from the requirements of our new strategy. For example, forces for forward presence must be almost entirely active, as must be a sufficiently large stateside rotation base to replace those forward forces periodically.

In applying the new strategy to our total force structure, we project that overall U.S. reserve forces will decline by about the same percentage as active forces. That circumstance, however, should not mask the fact that our future force will *not* merely be a proportionally scaled-back version of today's force. We are planning to eliminate those forces—be they active or reserve—whose justification has been based on the previous threat of short-notice global war. We also have given priority to preserving a mix of forces that can best meet our strategy's requirements for forward presence and crisis response. Some types of reserve forces will be fully retained or even increased, while others will be cut considerably. For example, Army reserve (and active) components will be cut substantially; in contrast, the Air Force reserve will decline only slightly. The criteria for such restructuring have come from the new strategy.

To help provide for reconstitution in our new strategy, some reserve forces will be maintained in "cadre" status. Cadre units would have greatly reduced manpower and training; but they would have the equipment and other preparations needed to facilitate a smooth transition to full strength if required. Our plans currently include two cadre divisions in the Army (not counted in the 18 divisions programmed for fiscal year 1995), plus creation of a new status for some Navy frigates.

Personnel Programs and Issues

In connection with the restructuring of America's armed forces, U.S. military manpower will decline considerably in the coming years. By the end of fiscal year 1995, active military end strength will fall to 1,653,000, 24 percent below its post-Vietnam peak of 2,174,000 in fiscal year 1987. In fiscal year 1995, reserve personnel levels will drop to 906,000, 21 percent below fiscal year 1987.

While manpower is projected to decline, there will be no diminution in DOD support for pay and other incentives aimed at preserving the high quality and morale of America's uniformed men and women. The budget requests pay raises of 4.2 percent for fiscal year 1992 and 4.7 percent for fiscal year 1993. These proposals are based on projected increases in the Employment Cost Index.

In fiscal year 1993, DOD civilian strength will fall to 976,000, about 9 percent below fiscal year 1990. In fiscal year 1995, DOD civilian strength is projected to drop to 940,000, about 17 percent below its post-Vietnam peak of 1,133,000 in fiscal year 1987. This decrease will be the result of both a smaller military force structure and DOD management improvements.

Chart # 8

DoD MANPOWER

(End Strength In Thousands)

	FY 87	FY 92	FY 93	FY 94	FY 95	FY 87-95 Change
ACTIVE MILITARY						
ARMY	781	660	618	577	536	-245
NAVY	587	551	536	516	510	-77
MARINE CORPS	199	188	182	176	171	-28
AIR FORCE	607	487	458	445	437	-170
TOTAL ACTIVE	**2,174**	**1,886**	**1,795**	**1,714**	**1,653**	**-521**
SELECTED RESERVES	1,151	1,068	989	924	906	**-245**
CIVILIANS	**1,133**	**1,003**	**976**	**958**	**940**	**-193**

Readiness

A strategy geared to crisis response demands that its component forces be ready to perform their missions on short notice. The fiscal year 1992–1993 request includes spending on training, maintenance, and other relevant accounts at levels sufficient to sustain the traditionally high readiness of U.S. forces. The request funds a training tempo approximately the same as in fiscal year 1991. Active Army ground and air training operations will continue at 800 miles per year for combat vehicles and 14.5 flying hours per month for tactical aircrews. Navy steaming days remain at 50.5/29.0 days per quarter for the deployed/non-deployed fleets. Flying hours for active Air Force tactical aircrews will hold at about 19 hours per month.

Investment

In fiscal year 1992–1993, the fielding of advanced weapons and other systems will continue, although many programs have been adjusted in recognition of evolving requirements and to bring acquisition plans in line with reduced defense spending projections. For example, major adjustments have been made in the B-2 bomber, C-

17 transport, SSN-21 attack submarine, and Milstar communications satellite programs.

My overall acquisition approach for the 1990s differs markedly from the past. This will be a decade of development, more than of production. Scaling back production helps us to (1) preserve our technological superiority through ambitious research and development, (2) procure high priority systems at more efficient rates, and (3) lay the foundation for sustaining U.S. military strength through the year 2000 and beyond.

The fiscal year 1992-1993 budget submission terminates a number of programs including Trident submarine, P-7A anti-submarine patrol aircraft, F-14D aircraft remanufacture, Naval Advanced Tactical Fighter, A-12 stealth aircraft, Air Force Advance Tactical Aircraft, Peacekeeper missiles, Mark XV aircraft identification system, Boost Surveillance and Tracking System, and Tacit Rainbow cruise missile. (As a consequence of the decision to terminate the A-12 for default, funds are requested to pursue development of medium attack aircraft alternatives and seek a longer-range, more capable variant of the F/A-18 aircraft.) These terminations come on top of those made in DOD's fiscal year 1991 request, most notably: V-22 Osprey, M-1 tank, new F-14D production, F-15E aircraft, Apache helicopter, and Army Helicopter Improvement Program. Our request also includes rescissions of $3.4 billion in fiscal year 1991, reflecting proposed program terminations in fiscal year 1992 and the elimination of other lower-priority expenditures.

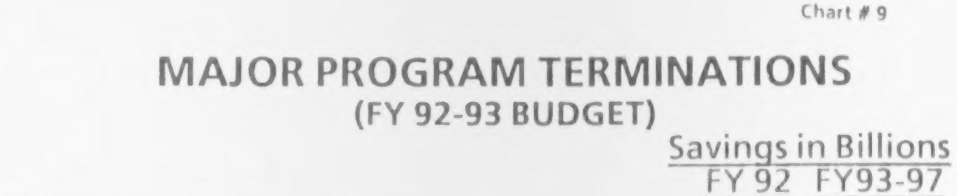


Chart # 9

MAJOR PROGRAM TERMINATIONS
(FY 92-93 BUDGET)

	Savings in Billions	
	FY 92	FY93-97
• Bradley Fighting Vehicle	0.7	1.7
• TRIDENT Submarine	1.4	2.8
• LHD Amphibious Ship	-	2.1
• P-7A Anti-Submarine Warfare Aircraft	0.6	5.4
• F-14D Remanufacture	1.4	13.4
• Naval Advanced Tactical Fighter	0.1	2.0
• A-12 Aircraft	2.7	19.5
• Air Force Advanced Tactical Aircraft	-	0.8
• F-16 Aircraft (End of FY 93)	1.6	13.8
• PEACEKEEPER Missiles	0.7	2.2
• MARK XV Combat Identification System	0.1	0.2
• BSTS Warning System	0.4	5.5
• TACIT RAINBOW Program	0.2	2.3

Chart # 10

MAJOR PROGRAMS TERMINATED LAST YEAR

- V-22 OSPREY (Production)
- F-14D Aircraft
- Army Helicopter Improvement Program (AHIP)
- PHOENIX Missile
- M-88A2 Improved Recovery Vehicle
- F-15E Aircraft
- Apache Helicopter
- M-1 Tank
- Maverick Missile

Strategic Forces and SDI. Modernization of U.S. strategic systems is being scaled back or adjusted substantially. Funding for the Rail-garrison Peacekeeper is cut back significantly, but development of the Small ICBM is continuing. No Trident submarines will be built beyond the 18th boat approved in the fiscal year 1991 budget. ASAT funding has been substantially reduced. The backfit of 8 Trident submarines to carry D-5 missiles has been deferred beyond fiscal year 1997. The Milstar satellite program has been substantially restructured to reduce costs, eliminate certain expensive survivability features, and support most effectively both tactical and strategic requirements. Consistent with my restructuring last year of the B-2 Stealth bomber program, the request calls for procurement of 4 aircraft in fiscal year 1992 and 7 in fiscal year 1993.

Chart # 11

FY 1992/FY 1993 STRATEGIC FORCES
(Dollars in Millions)

	FY 1992		FY 1993	
System	Quantity	Dollars	Quantity	Dollars
B-2A Bomber	4	4,822	7	4,639
Strategic Defense Initiative	-	4,581	-	4,933
TRIDENT II Missile	28	1,271	31	1,380
PEACEKEEPER/Rail Garrison	-	458	-	106
Small ICBM	-	549	-	715
Advanced Cruise Missile	120	626	102	552

The Strategic Defense Initiative (SDI) is being reoriented to provide global protection against limited ballistic missile strikes—whatever their source. This reorientation will make possible major savings, about 20 percent over the next 6 years compared to the earlier plan. In fiscal year 1992, $4.6 billion is requested for SDI and $4.9 billion in fiscal year 1993.

This refocused defensive concept, known as Global Protection Against Limited Strikes (GPALS), includes theater missile defenses to protect U.S. and allied troops deployed abroad. To centralize and accelerate development of such defenses, the Strategic Defense Initiative Organization has been charged with developing advanced defensive technologies to deploy much improved, transportable theater missile defenses within the next 5 years. Budget authority for the Tactical Missile Defense Initiative (TMDI) will $218 million in fiscal year 1991, $603 million in fiscal year 1992 and $724 million in fiscal year 1993.

Conventional Forces. The Army's major modernization effort, begun in the early 1980s, is nearly complete. However, important development continues on the Light Helicopter and armored vehicles.

Chart # 12

FY 1992/FY 1993 LAND FORCES
(Dollars in Millions)

System	FY 1992		FY 1993	
	Quantity	Dollars	Quantity	Dollars
UH-60 Helicopter	60	508	60	428
SINCGARS	-	288	-	292
Light Helicopter	-	550	-	617
Apache Longbow	-	233	-	264
Medium Tactical Vehicles	1,815	170	3,288	293

Procurement of the Navy's SSN-21 attack submarine has been scaled back to one per year. Other naval modernization priorities include Aegis destroyers, F/A-18 fighters, and several types of tactical missiles. Regarding sealift, DOD expects to be able to meet its most important contingency requirements worldwide, especially because of the programmed increase of the Ready Reserve Force (RRF) from 96 to 142 cargo and tanker ships by fiscal year 1994. DOD is also initiating a sealift program in fiscal year 1993 to improve U.S. response time for those contingencies. Consistent with this effort, a program is being structured to utilize funds appropriated in fiscal year 1991.

Chart # 13

FY 1992/FY 1993 NAVAL FORCES
(Dollars in Millions)

System	FY 1992		FY 1993	
	Quantity	Dollars	Quantity	Dollars
Aircraft Carrier Replacement	-	-	-	852
SSN-21 Submarine	1	2,382	1	2,464
DDG-51 Destroyer	5	4,335	4	3,480
LSD (CV)	1	245	1	251
MHC Coastal Minehunter	2	231	2	222
TAGOS Surtass Surveillance Ship	-	-	1	150
AOE Replenishment Ship	1	540	-	-

Modernization of U.S. tactical air forces continues with procurement of F-16 fighters, C-130 transports, and AMRAAM missiles. The next generation air superiority fighter—the Advanced Tactical Fighter (ATF)—continues in development. The

C-17 program has been scaled back and extended. But the C-17 is needed more than ever to begin to replace aging C-141s, which have been used so heavily in the Gulf crisis.

Chart # 14

FY 1992/FY 1993 TACTICAL AIR FORCES

(Dollars in Millions)

System	FY 1992		FY 1993	
	Quantity	Dollars	Quantity	Dollars
F/A-18	36	2,423	20	2,534
Advanced Tactical Fighter	-	1,637	-	2,325
F-16 D	48	1,419	24	923
C-17	6	2,831	12	4,212
EA-6B Remanufacture	-	110	3	556
AMRAAM	1,191	1,031	1,469	1,049
MILSTAR (Restructured)	-	1,404	-	1,536

Research, Development, Test and Evaluation (RDT&E). Reflecting the emphasis on preserving the technological superiority of U.S. forces, fiscal year 1993 RDT&E budget authority will, after inflation, be 10 percent above fiscal year 1991 levels. DOD Technology Base funding—$3.9 billion in fiscal year 1992 and $4.0 billion in fiscal year 1993—will include emphasis on high performance computing and improved materials for electronics, gas turbine engines, and airframe components.

Base Closure. The streamlining of the military's base structure is continuing with the elimination or closure of 86 domestic bases and 139 overseas sites. In addition, 5 domestic bases will be partially closed and another 25 overseas sites will be drawn down. During 1991 a new commission will review my proposals for additional base closures and realignments and make recommendations for consideration by the President and the Congress. No new proposals are included in this fiscal year 1992-1993 request; but savings of $150 million in fiscal year 1992 and $735 million in fiscal year 1993 are included in its legislative contingency account, in anticipation of congressional approval.

DEFENSE MANAGEMENT

DOD management continues to undergo fundamental change through implementation of my July 1989 Defense Management Report (DMR). Special emphasis is going toward streamlining and improving defense acquisition. DOD is eliminating unnecessary management layers, limiting unneeded reporting requirements, reducing burdensome regulations, and enhancing the education and quality of its acquisition professionals.

Chart # 15

DEFENSE MANAGEMENT REPORT INITIATIVES

- Data Processing & Corporate Information Management
- Consolidate Finance and Accounting Services
- Coordinate Maintenance Depot Services
- Consolidate Supply Depots
- Reorganize Contract Management
- Improve Technical/Engineering Research & Development
- Consolidate Commissary Operations

Central to these management efforts is the goal of bringing down the Department's cost of doing business. This means reducing overhead, cutting excess infrastructure and redundancy, and consolidating and improving a number of common functions. An example is the creation of the Defense Finance and Accounting Service (DFAS). This proposal was announced along with other fiscal year 1990 initiatives and was under debate last year. On January 15, 1991, the military departments' accounting centers were finally merged under the new organization. This will streamline and strengthen DOD's financial management, and better enable it to employ new technologies to cut costs even further.

Other management improvements involve supply operations, maintenance depots, and RDT&E. To enhance supply depot efficiency, DOD will consolidate the management of supply operations under the Defense Logistics Agency. This will save base and headquarters overhead costs, systems development costs, and inventory and transportation costs, plus significantly improve utilization of our existing supply capacity.

For DOD's maintenance depots, we are working toward fuller use of our depot capacity, greater competition among the services and with the private sector, reduced infrastructure, and improvements in DOD's maintenance productivity.

To increase efficiency and reduce the costs of RDT&E operations, there will be greater coordination within the Department on specific technology areas, consolidation of facilities, and enhanced competition for Science and Technology (S&T) tasks among laboratories. Management oversight also will be increased to improve the quality, productivity, and effectiveness of RDT&E operations.

As a result of its DMR-related management efforts, the Department anticipates reductions of over 30,000 civilian and 40,000 military positions by the end of fiscal year 1997. DOD expects its management initiatives to save about $72 billion from fiscal year 1991 through fiscal year 1997.

CONCLUSION

We are at the dawn of a new era. For much of the past 45 years our primary security concern has been the Soviet threat in Europe. We met that challenge successfully. The threat to Western Europe has diminished. But as the war in the Gulf demonstrates, meeting regional threats can be quite demanding even when we can marshal international cooperation.

To preserve our unique international role, to consolidate the changes in Europe, and to contain and defeat the many possible regional threats we may one day face, we must sustain America's military forces for the new world. We must remember that military strength of the kind we have relied on in the Persian Gulf cannot be built overnight. Continued investment in America's defense is a must, as we look forward with confidence to the years ahead.

Chairman NUNN. Thank you, Mr. Secretary, for a very thoughtful statement. General Powell.

STATEMENT OF GEN. COLIN POWELL, CHAIRMAN, JOINT CHIEFS OF STAFF

General POWELL. Thank you very much, Mr. Chairman.

It is a pleasure to appear before the committee at this time to discuss the fiscal year 1992 and fiscal year 1993 President's budget.

Let me begin, Mr. Chairman, by thanking you for your kind remarks and Senator Warner's kind remarks about the job our troops are doing on Operation Desert Storm. I know all the members of the committee feel the same pride I feel in the professionalism and the courage of those men and women. And, of course, our thoughts and prayers are with them and with their families at this time.

You were also kind, Mr. Chairman, in complimenting the leadership of these forces. But I have to say to you, it is the easiest force in the world to lead because of the quality and the patriotism they bring to their jobs. And I am enormously proud to be the Chairman of the Joint Chiefs of Staff at this particular time in our Nation's history.

As we discuss today the best military strategy and force structure for defending America from the threats that she will face in the future, we must never forget that after the money is spent, and the weapons purchased, and the forces trained, it comes down to dedicated men and women willing to put their lives on the line for their country—men and women such as you visited over the past few days in the Persian Gulf.

Looking back over the past 12 months since we last appeared before the committee, we have seen tremendous change in the world, as the Secretary has noted. The international security environment is undergoing a profound transformation, due in no small measure to steadfast U.S. and allied resolve over the years.

We, the Joint Chiefs of Staff, recognize that we are in a changing world. But we also note that it is not yet a completely changed world. It is a world of continuing danger mixed with promise, hope mixed with uncertainty, and as we all can see, peace mixed with war.

We are in a time when America's role in world events is increasing, not decreasing. Our status as the leader of the free world will require us to remain engaged, to have the will and the ability to lead, and to lead energetically.

In this environment, the fundamental role of America's Armed Forces will remain the same. It is to deter war and should deterrence fail, to be prepared to defend the Nation's vital interest against any foe.

As a great democracy, we are morally bound to an inherently defensive posture. As the world's sole superpower, in every meaning of the term, we have global interests and responsibilities that require a military force of wide-ranging capabilities.

I would like to begin my presentation by discussing what I believe are certain emerging realities that have come out of this new environment, as well as enduring realities, things that really have not changed as much as the environment has changed.

The most important emerging reality is one that the Secretary has covered so very, very well. And that is the demise of the Cold War. The Cold War and all its military totems that I grew up with, the Fulda Gap, the Berlin Wall, the Iron Curtain, the Warsaw Pact, are gone, and they are not coming back. The old European context that has driven our military thinking for so many years has now fundamentally changed.

That which I learned as a Second Lieutenant and practiced as a Corps Commander 28 years later, is gone.

The Joint Chiefs of Staff and all the officials at the Pentagon and the commanders in the field recognize this. We know we have to rethink all that we have learned over the last 30 to 40 years with respect to doctrine, force structure, concepts of readiness, and the kind of technology we need. All of this has to be rethought and we have to open our minds to this new environment.

We also recognize another clear reality: that we are continuing to have a decline in the defense budget, 7 straight years of decline. This time, however, as a result of the budget summit, we have 3 straight years of knowing exactly what our numbers are going to be. That gives us the kind of stability we need to put together a coherent defense package that is related to the dollars we will have and the new environment that we will be operating in.

I want to let you know that the Chiefs understand this, and we are prepared to deal with this new environment in a realistic way.

However, change of this nature is not the only characteristic of the new environment. No matter how mesmerized many have become with the truly astonishing events of the past few years, we must never forget that some things have remained the same. These are the enduring realities, and I would like to touch on just a few of those enduring realities before going on to the force structure that we are designing to match the strategy the Secretary has just laid out.

The first, most important enduring reality is that of Soviet military power. This power, as has been noted, is finally being reduced. It is no longer the same threat that it presented to us for 40 years. But at the same time, Soviet military power is hardly becoming irrelevant.

Whatever the future Soviet state may look like, whatever the future Soviet economy may be able to support, that state and that economy will still put on the ground the strongest military force on the Eurasian land mass. After all is said and done, when we come through this traumatic process with the Soviet Union, it will still have millions of well-armed men in uniform. And this is a reality we cannot overlook.

While we are all hoping for a successful conclusion of START talks and a cap on Soviet strategic nuclear forces, the Soviet Union now and in the future will still remain the single country on the face of the earth capable of destroying the United States and our way of life in 30 minutes. That is the reality that I wake up to every morning as Chairman and a reality we must never forget.

Another enduring reality is that we will continue to have vital interests across the Atlantic Ocean. Yes, things have changed in Europe. Yes, we are seeing something develop in Southwest Asia with respect to regional problems. I hope Operation Desert Storm will show our ability to prevail and deal with that kind of regional problem.

But in the aftermath of the Cold War and in thinking about what happens after Desert Storm, we should not become isolationist. We should not think that we can return to the United States and forget our interests across the Atlantic. We will have continuing interests in Europe. We will have continuing interests in the Mediterranean, in the Middle East, and in Southwest Asia.

Even in the future, American support for a vibrant NATO is critical. American support for the security needs of our friends in Southwest Asia and in the Middle East is critical.

As we look to this future security context, I like to characterize our interest as being across the Atlantic, not just in Europe with a single focus as it has been for so many years, but Europe, the Mediterranean, the Middle East, and Southwest Asia.

In a moment I will show you why I think we ought to look at it in that total context, across the Atlantic, because it drives the nature of the forces and the force structure we need for that part of the world.

We are bounded, not just by one great ocean but two. We look not only eastward across the Atlantic, but westward across the Pacific. And in the Pacific we see another region of enduring American interest, another enduring reality. We cannot forget that this is an area where we fought two bloody wars in the last 40 years.

Here is a region that, although there has not been a great deal of trouble there recently, continues to look to the United States for leadership, for counsel, for security. So across the Pacific, we see interests which are another enduring reality.

And finally, there is the enduring reality of the unknown, the crisis that no one expects, the contingency that suddenly comes along. We are not the superpower or super policemen of the world, but when there is trouble somewhere in the world, it is the United States that gets called on to perform the role of being the cop on the beat.

So our future geo-political context is a new era of progress, the demise of the Cold War, real cuts in defense spending that we have to live with, the continued reality of Soviet military power, and a recognition that we have to remain engaged across the Atlantic and the Pacific to preserve our vital interests.

We have to make sure that as we build our new force structure in this new environment, we have the ability to respond to the crisis nobody expected, nobody told us about, a contingency that suddenly pops up at 2 in the morning.

And finally, we have to never lose sight of the fact that the Soviet Union remains a world-class nuclear power. We have to be able to continue to deter that kind of power.

Within this context then, how do we build our forces? What are we looking at? For purposes of illustration, I have put together four conceptual force packages, and then four supporting capabilities that go along with these force packages.

I think in terms of strategic forces, Atlantic forces, Pacific forces, and contingency forces. And then the underlying capabilities that we have to have that deal with transportation, the use of space, the ability to reconstitute if we have guessed wrong, and then finally research and development, to give us the technological edge that the Secretary has spoken about.

If we match these eight elements, force packages and the underlying capabilities in a sensible way, balance them off, put together a base force so we know the minimum needs the Department has, the Nation has, and if we match that with the resources that the Congress has provided to us, I think we can come through this process with a national security posture that is sound, with a force that is prepared to meet the challenges for the remainder of this decade and the 21st century.

Let me talk a little bit about strategic forces. We need to maintain a modern, strategic nuclear arsenal. You will see that the President's budget continues the purchase of all elements of our triad, the B-2, and the D-5 procurement, while finishing off the procurement of Trident boats. You will see that we invest in strategic command and control and communications systems to make sure that we have a good system.

You will also see that we go forward with the Strategic Defense Initiative (SDI), reoriented as the Secretary has noted, to the threat of local development of ballistic missiles that could threaten us and our allies, as well as the beginning of a system that would deal against accidental launches against the United States.

The Joint Chiefs of Staff are still committed to a full SDI system—in due course after we take these first steps—that would lead to total protection of the United States and shift the whole equation of strategic deterrence from that of offensive to that of defensive systems.

Wherever the negotiations take us we must have strategic forces second to none.

Next, we need to think in terms of Atlantic forces, forces that have to be projected across the Atlantic Ocean, back to Europe, to Southwest Asia, to the Middle East.

We must maintain a forward presence in Europe, much smaller than we have had over the last 40 years, with different assumptions concerning warning and what the Soviet Army might do. Nevertheless, we must remain engaged with a forward presence on the ground, including heavy units. Perhaps a heavy Army corps supported by the necessary Air Force wings, with the ability of the Navy to project power back across the Atlantic if need be, with a large Reserve components structure, structured differently than it has been in the past, but with the ability to give us additional forces, to reinforce in Europe, and in Southwest Asia, should that be necessary, just as we have had to do in Operation Desert Storm.

So the Atlantic force component is very much like what we have had for the last 40 years. Assumptions would change with respect to warning, the Active/Reserve component mix, and to what we need in terms of reconstitution. The point I want to make is that the United States must remain engaged across the Atlantic.

With respect to the Pacific, I think we also have to maintain forward presence in Japan, in Korea, elsewhere in the region, but fundamentally, a maritime presence. We do not need the same kind of forces oriented toward the Pacific that we have oriented toward the Atlantic. Lighter forces, less forward presence. Principally, as I see it, a maritime presence with some Army and Air Force ground units, and with the ability to reinforce from the United States. We would also have smaller components of our reserve structure oriented toward the Pacific.

Turning to contingency forces, we have seen the value of having light, mobile forces, ready to go on a moment's notice, in order to go to a place such as Southwest Asia under Operation Desert Shield, to deal with the crisis in Panama, to respond to something that happens in Liberia, or to rescue Americans in danger in Somalia, as we have done, all within the last few months.

These contingency forces would be from the Army, the Navy, the Air Force, and the Marines, and very often might serve as the leading edge of forces being introduced for a major regional contingency, just as we used them in Operation Desert Shield and Desert Storm. You will see that we want to make the investment to keep these forces at the highest level of readiness.

I would also say that the contingency forces would have less dependence on Reserve components than other parts of our force structure because I think they have to be in a high state of readiness to go quickly. Reserve components might be needed in due course to give them sustaining power, along with sustaining power drawn from Atlantic and Pacific forces. But I am looking at contingency forces that would be rapidly mobile, ready to go, and highly lethal.

These four packages, then, are: strategic forces second to none; Atlantic forces with "a heavy" orientation, the ability to reinforce across the Atlantic, and a significant Reserve components part; Pacific forces, light, principally maritime, some Army and Air Force forward-deployed presence, and less of a Reserve component configuration for the Pacific forces; and finally, contingency forces ready to go on a moment's notice.

With those force packages you have to have these underlying capabilities that I spoke about earlier. The first of them is transportation. In the last few years as National Security Advisor, as Commander of Forces Command, and for the past 17 months as Chairman of the Joint Chiefs of Staff, I have had to go to that transportation command repeatedly, to deal not only with military crises around the world, but to deal with hurricanes on the east coast, to deal with forest fires in the great Northwest, to deal with providing relief supplies to nations in need around the world.

Our transportation capability is a national asset, not just a military asset, a national asset. I strongly support all efforts to modernize our transportation capability. Additional sealift, as well as new modernized airlift; as represented by the C-17, a program we very desperately need to modernize our airlift capability.

In addition to a transportation capability, we have to make sure that we make a proper investment in our space systems for command and control, for intelligence, surveillance, and navigation, to make sure the United States will always be able to operate freely and effectively from the high ground of space.

Reconstitution is the third underlying capability: the ability to rebuild our forces, if as the Secretary noted, a year, or two, or three from now, we realize things are not turning out the way we wanted. If we realize that the base force we are building now is not adequate to the challenge of the future, we will have to rebuild. Therefore, we have to make sure we have invested in those elements of reconstitution that would be needed to bring back forces from our Reserve components. For example, cadre structure, would enable us to start lines up again in our defense industries, and to be able to build our forces back up, not over a 10-year period, but over a rapid period should it be necessary.

The final capability, underlying capability, we must have, is a solid research, development, and acquisition system to make sure that American forces are always leading with the very best technology American inventiveness and industry can provide.

Operation Desert Shield/Desert Storm was a good test case of this new concept and the kind of underlying strategy that the Secretary described. Suddenly, a crisis was upon us. I think some members of the committee will remember the afternoon of August 2. I know Senator Nunn and Senator Warner will remember it vividly. We sat in a small room and talked about this new concept at the same time a crisis was upon us.

We responded to that crisis initially with forces in the structure for rapid response, contingency oriented forces: the 82d Airborne Division, the 1st Tactical Fighter Wing out of Langley Air Force Base, and the beginning of the movement of Marine maritime prepositioning forces. And then, as that contingency force got on the ground and put American soldiers, sailors, marines, and airmen on the scene, as we brought in naval forces that were in the area, we put down a positive signal to Saddam Hussein that the United States was on the ground ready to defend her interests.

We also knew that was a thin shield. So, we began drawing from the heavy forces that existed in the United States and in due course, we brought in forces from the Pacific, additional naval forces. In due course, we used the forces that we had in Europe to build up the capability represented by the 520,000 men and women who are in Operation Desert Storm/Desert Shield now.

I would be remiss if I did not point out the enormous contribution made by the Reserve components. The Reserve components that we had in the structure, principally, for European oriented contingencies. I need not point out the importance of our transportation system to get them there, the importance of our space systems to control all of that, and the importance of the technology that we have invested in over the years to give our troops the edge that is proving so decisive at this point.

So I think, Mr. Chairman and members of the committee, you can see that our concept is not all that different from what we have been doing in the past. We put it into these four force packages with these underlying capabilities to give it some structure so that, as you see us develop individual force structure elements in the months ahead, you will see the regional orientation they have, as well as the capability orientation they have.

I look forward, Mr. Chairman, as do my colleagues on the Joint Chiefs of Staff and the Commanders of the unified and specified commands, to working with you and the members of the committee in the months ahead, to make sure we put together a structure that is consistent with the budget guidance we have been given, consistent with our national security needs, and consistent with the need to make sure that our future force is as proud, capable, and professional as the force you now see in Operation Desert Storm.

Thank you, Mr. Chairman.

[The prepared statement of General Powell follows:]

Prepared Statement of General Colin L. Powell, Chairman of the Joint Chiefs of Staff

Mr. Chairman, distinguished members of the Senate Committee on Armed Services, thank you for the opportunity to testify today on America's military posture in connection with your hearings on the President's defense budget for fiscal years 1992 and 1993.

While we discuss this budget request here today, American forces and our coalition allies are engaged in combat half way around the globe. Thus, I plan to discuss Operation Desert Storm as well as America's overall military posture.

I know the members of the Armed Services Committee feel the same pride I feel in the professionalism and courage of the men and women of our Armed Forces now at war in the Persian Gulf region. Some of our troops are prisoners of war, some are missing in action, and some have lost their lives. Our thoughts and prayers are with their families. As we discuss today the best military strategy and force structure for defending America from the threats she might face, we must never forget that, after the money is spent and the weapons purchased and the forces trained, it all comes down to dedicated men and women willing to put their lives on the line for their country—men and women such as those at war in the Gulf today.

DRAMATIC CHANGES AND THE NEW WORLD ORDER

Looking back over the past 12 months, we have continued to see a period of tremendous change in the world, of new forces shaping the strategic landscape. The international security environment is undergoing a profound transformation, due in no small measure to steadfast U.S. and allied resolve.

In 1989, we witnessed the first stages of the emerging new order with the upheaval in Central and Eastern Europe and the fall of the Berlin Wall, as people kept under the yoke of communism and dominated by the Soviet Union for four decades gained their freedom. In 1990, the changes accelerated: Germany united, Soviet troops leaving Central and Eastern Europe as host countries held free elections, the Warsaw Pact collapsing, and a major arms control agreement was concluded which will reduce conventional forces in Europe. These events might never have occurred had it not been for the strength and purpose we and our allies demonstrated over the past 40-plus years.

NATIONAL SECURITY INTERESTS AND OBJECTIVES

Despite the dramatic changes in the international environment, the broad national security interests that give focus to U.S. military objectives, strategy and forces remain largely constant. These interests encompass:

—The survival of the United States as a free and independent nation, with its fundamental values intact and its institutions and people secure.

—A healthy and growing U.S. economy to ensure opportunity for individual prosperity and a resource base for national endeavors at home and abroad.

—A stable and secure world, fostering political freedom, human rights, and democratic institutions.

—Healthy, cooperative, and politically vigorous relations with allies, friendly nations, and former adversaries.

THE ROLE OF U.S. ARMED FORCES

The fundamental role of America's armed forces remains constant: to deter war and, should deterrence fail, to defend the Nation's vital interests against any potential foe. As a great democracy we are morally bound to an inherently defensive posture. As the world's sole superpower in every meaning of the term, we have global interests and responsibilities that require a military force of wide-ranging capabilities. We need these forces to:

—Deter military attack against the United States, its allies, and other countries whose interests are vital to our own; and to defeat such attack, singly or in concert with other nations, should deterrence fail.

—Protect free commerce; enhance the spread of democracy; guarantee U.S. access to world markets, associated critical resources, air and sea lines of communication, and space; and contribute to U.S. influence around the world.

—Contribute to regional stability through military presence, mutual security arrangements, and security assistance; and to discourage thereby, in concert with other instruments of power, policies and objectives inimical to U.S. security interests.

—Stem the production and transit of illegal drugs and their entry into the United States.

—Help other national and international agencies combat terrorism.

EMERGING AND ENDURING REALITIES

While our national and military objectives have remained relatively constant, the threat to our accomplishing those objectives has changed. So has the fiscal environment that sustains our military forces. Two *emerging* realities accentuate these changes.

The most important emerging reality is the end of the Cold War and a redefined and improved relationship between the United States and the Soviet Union. The old context for maintaining our force structure is gone, and our understanding of what will replace it is necessarily incomplete.

The second emerging reality is that, given the requirement to bring government spending and revenues into balance, military planners must assume that our defense budget and the resources available to us will continue to decline for the foreseeable future. However, as the Iraqi aggression against Kuwait amply demonstrates, we cannot afford to reduce our budget so quickly and so far as to harm our capability to defend our interests whenever they may be threatened. Nevertheless, reduced defense budgets, like our Cold War victory, are realities with which military leaders must deal.

Accompanying these *emerging* realities are important *enduring* realities. The first is the reality of Soviet military power. While the Soviet military threat is finally being reduced, it will hardly disappear. Notwithstanding its evolving ideology and the intentions of its leadership, the Soviet Union remains the one country in the world with the means to destroy the United States in a single devastating attack.

Even after a START Treaty is concluded and the two sides begin to reduce their strategic nuclear arsenals, the U.S.S.R. will retain thousands of nuclear warheads. And Moscow continues to modernize its strategic nuclear forces as it reduces some of its older, obsolete systems.

With the ratification of the CFE Treaty, the principal threat to Western Europe—a short-warning attack by massive Soviet conventional forces—will have been removed. Nevertheless, whatever the future Soviet state may look like, it will still have millions of well-armed men in uniform and will remain, by far, the strongest military force on the Eurasian landmass.

The second enduring reality is America's continued vital interests across the Atlantic Ocean. All of the positive changes we have seen in Europe are a testament to the success of collective defense. Preserving a free and stable Europe will remain an enduring interest of the United States that requires our attention and our resources.

Although the prospect of a concerted military threat to Western Europe from the East has faded, continued political and economic instability in Central and Eastern Europe and the Soviet Union presents new concerns and the imperatives for new approaches to collective security.

Consequently, we and our NATO partners are conducting a thorough review of alliance strategy. The broad outlines of a new force posture are already emerging and include highly mobile military units, some of which will be restructured into multinational formations. The number of active units will be scaled back, and increasing reliance will be placed on mobilization and reconstitution.

Also across the Atlantic are the Middle East and the Persian Gulf. There, enduring obligations and regional threats to U.S. vital interests will place continuing demands on our armed forces. After we eject Iraq from Kuwait, we will need to examine carefully our commitment to the region and what sort of collective security arrangement will be required to deter future threats to our friends and allies there.

A third enduring reality lies in and across the Pacific Ocean. There, the divided Korean Peninsula stands in contrast to a Europe becoming increasingly whole and free. However, the U.S. security burden in Korea is being eased by the continuing growth of democracy, economic success, and military capability in South Korea. The continuing presence of U.S. combat forces on the Peninsula is essential to bolster deterrence, as well as to promote the long-term prospects for a peaceful North-South dialogue. Our recent assessment of the U.S.-Republic of Korea (ROK) security relationship demonstrated that we can make modest reductions in our force presence in Korea, as well as in Japan and elsewhere in the Pacific, and that we can initiate a gradual transition toward a partnership in which ROK forces assume the leading role on the Peninsula.

However, should deterrence fail, in-place and reinforcing U.S. forces would still be required to blunt, reverse and defeat the type of short-warning attack that North Korea is still clearly capable of mounting.

For the Pacific region as a whole, a modest level of U.S. military presence—principally maritime—will be essential to preserve stability, encourage democracy, and deter aggression.

A fourth enduring reality is the uncertain nature of world events. In the less-predictable yet increasingly important other regions of the world, the United States seeks to preserve its access to foreign markets and resources, deter regional aggressors, and promote the regional stability necessary for progress and prosperity.

From Latin America to Sub-Saharan Africa, American military men and women contribute to the unsung tasks of nation-building, security assistance, and quiet diplomacy. Performance of these tasks protects and extends political good will and commercial access to foreign markets. Success in this respect becomes increasingly critical in an era of reduced forward presence, when forces deploying from the United States are more than ever dependent upon en route and host-nation support to ensure timely response to distant crises. And, as we all know, in a world of uncertainty, *crises will arise when least expected.*

CENTRAL MILITARY STRATEGIC CONCEPTS

Our national strategy is founded on the premise that America will continue to provide the leadership needed to preserve global peace and security. Consequently, our military strategy continues to rely on the basic elements that made possible the historic success of containment and assured the favorable outcome of dozens of lesser military conflicts and missions over the past 45 years.

Deterrence. Deterrence must continue to be the motivating and organizing concept for America's armed forces. We are not an aggressor nation. We can have no other policy without destroying our values and, thus, our true strength. Deterrence demands a military establishment of global scope and great competence. To deter successfully nuclear and conventional aggression poses military challenges beyond the reach of any other nation on earth.

Power Projection. Whenever U.S. interests are threatened, this country must have the capability to project its military power if it is needed. We must move personnel and equipment from U.S. bases and forward deployments to the scene of the crisis quickly and in enough numbers to determine the outcome. Projecting power quickly is a demanding, complex operation. Assembling a fighting force at distant locations requires ready, mobile forces and an appropriate mix of airlift, sealift, and forward-positioned equipment stocks, as well as the capability to conduct forcible entry as required. Our capability to project power contributes greatly to deterrence, regional stability, and collective security.

Forward Presence. Over the past 40 years, the day-to-day presence of U.S. troops has been key to averting crisis and preventing war. Forward presence provides visible deterrence, preserves regional stability, and promotes U.S. influence and access. Forward presence can include, but is not limited to, stationed forces, rotational deployments, access and storage agreements, combined exercises, security and humanitarian assistance, port visits and military-to-military relations. We know that military forward presence will be reduced in the future. But prudent forward-basing and deployment of forces and the pre-positioning of combat and support materiel must be done to reduce the burdens of power projection.

Reconstitution. With the reduction in the Soviet threat that drove U.S. peacetime military strength since World War II, we now confront a familiar but no less demanding challenge: the strategic concept of reconstitution. This requires us to maintain the capacity to reconstitute a large, effective defense capability, if the need should arise. Preserving this potential will require foresight in protecting the infrastructure, stockpiling critical materials, protecting the defense industrial base, investing in basic science and high-payoff technologies, and constituting Reserve units adaptable to activation as the mission dictates.

Collective Security. Forward presence is most effective when embodied in collective security arrangements. These arrangements coordinate common security interests, codify commitments, enhance combined doctrine and interoperability, and provide integrated command structures. In a future of declining defense budgets and less forward presence, we increasingly will rely on collective security arrangements to protect and further our and our allies' global interests.

Maritime and Aerospace Superiority. Control of critical sea, air and space lines of communication underwrites our other strategic concepts. Control of these lines is essential to our ability to protect global U.S. interests and to project power, reinforce, resupply, and gain access. Maritime and aerospace superiority gives us the capability to achieve this control and provides our National Command Authorities with a wide range of options during peace, crisis, or war.

Security Assistance. Collective security can be strengthened greatly, particularly with lesser developed nations, through security assistance. Dollars invested to help friends and allies build indigenous military capabilities and to gain their confidence bring tremendous returns in helping the U.S. to meet its regional objectives.

Arms Control. With the improvement in U.S.-Soviet relations, arms control has become an important means of reducing the levels of nuclear and conventional arsenals. Arms control is not, however, an end in itself but rather a means to an end—that end being providing for our national security. Through arms control agreements we seek to reduce military threats to our interests, inject greater predictability into military relationships, and channel force modernization in more stabilizing directions.

Technological Superiority. We give our military men and women the most technologically advanced weapons in the world. We rely on our qualitative superiority to counterbalance the quantitative superiority of our potential adversaries. Every day, Operation Desert Storm demonstrates the advantages of this level of technical achievement. To maintain this level of technology, a continued, robust research and development program is essential.

OTHER MILITARY TASKS

Accompanying these central strategic concepts are several related tasks:

Combating Drugs. The detection and countering of the production and trafficking of illegal drugs is a high-priority national security mission for our armed forces. The President and the Secretary of Defense have directed that we deal with this threat as a clear and present danger. We have accepted that mission and remain fully committed to achieving success. We have already come a long distance. We have established an effective communications network for Federal, State and local law enforcement agencies. We have dramatically enhanced our operational detection and monitoring capabilities. We have encouraged and supported nations that host or provide transit to drug traffickers. We have helped them develop the kind of aggressive and capable efforts we have seen demonstrated by our own agencies. That said, however, this mission will continue to require deployed, properly trained, and well equipped forces for the foreseeable future.

Combating Terrorism. The spread of international terrorism poses a pervasive threat to the United States and to the rest of the civilized world. Deterring terrorist attacks on U.S. and allied citizens and property and responding effectively to terrorist attacks remains a continuing mission of U.S. armed forces. This mission calls for a military force manned, equipped and trained to respond effectively to neutralize the threat such attacks pose.

MILITARY FORCE PACKAGES

To implement our strategic concepts and to accomplish all of the missions we require of our forces, I see the continuing need for four basic military force packages, backed by four supporting capabilities. The four basic packages are Strategic forces, Atlantic forces, Pacific forces, and Contingency forces. The four basic supporting capabilities are a Transportation Capability, a Space Capability, a Reconstitution Capability, and a Research and Development Capability. If we have these forces and capabilities, balanced and matched to the available resources, I feel confident that we can meet the challenges of the world's emerging and enduring realities.

STRATEGIC FORCES

First, while the pending START Treaty is a major step toward reducing nuclear arsenals, it will not eliminate the Soviet nuclear threat. The United States will continue to need modern strategic nuclear forces to deter Soviet nuclear attack. We will remain committed to a triad of nuclear forces: land-based missiles, missile-firing submarines, and manned bomber aircraft. The makeup of that triad may shift; our reliance on sea-based systems will probably grow. We will continue to pursue the promise of anti-missile defenses through the Strategic Defense Initiative. A robust, survivable, reliable command, control, communications and intelligence system must be fielded.

The President's Budget reflects these priorities. We will scale back our strategic forces in accordance with expectations regarding completion of the START Treaty. Termination of the Trident submarine program, retirement of Minuteman II missiles and accelerated retirement of Poseidon submarines, and continued reduction of the bomber force as B-52s are retired and FB-111s are transferred to a tactical role will all take place. However, we will proceed with needed strategic modernization programs such as the Trident II missile, the B-2 bomber, and the advanced cruise missile. The MX rail garrison program will be scaled back, although we will proceed through the first developmental test. Development of the Small ICBM will also continue, although we have no plans for deployment at this point. We feel that these modernization efforts provide the minimum investment to maintain an adequate strategic nuclear deterrent against any potential adversary.

I remain fully committed to the President's continued emphasis on strategic defensive forces. We need to have the ability to deter an attack on the United States and to defend against an attack if deterrence fails. The restructured SDI program remains consistent with the objectives previously established by the Joint Chiefs of Staff for a Phase I system. The increased investment in protection against limited strikes and in theater defenses is also appropriate and prudent.

ATLANTIC FORCES

Second, we need Atlantic forces to help achieve stability and protect U.S. interests in the Atlantic region, including Europe, the Mediterranean Sea, the Middle East, and Southwest Asia. U.S. air, land, and maritime forces must still be postured to sustain collective European security, ensure access to oil in the Persian Gulf, and to meet American commitments to the security of friends and allies in the Middle East and Southwest Asia. NATO and our numerous bilateral relationships will continue to provide the framework within which we operate these forces. Forward presence and the ability to project power quickly will be their basic operational concepts.

In Europe itself, we will continue to rely on a forward presence consisting of mechanized and armored ground forces capable of prevailing against a similarly armed opponent; naval forces capable of establishing and maintaining sea control, while projecting power ashore; amphibious forces capable of conducting forced entry operations; and air forces that can achieve air superiority while conducting other support missions. We will also need to maintain a presence in the Mediterranean and in the post-war Persian Gulf. While remaining available to other theaters, the bulk of the Nation's Reserve forces would augment and support our Atlantic forces.

The President's Budget provides for a continued forward presence across the Atlantic and for sufficient modernization to support the forces necessary to sustain that presence. Despite our expectation of a reduced Soviet threat to Europe, our modernization efforts must continue to emphasize the level of technology and the type of force structure needed to operate in a high intensity environment—the kind of environment we are experiencing in the Persian Gulf at this very moment.

PACIFIC FORCES

We will continue to need Pacific forces similar to those we have in place today across that vast region, though with smaller components, especially among our ground forces. Forward presence in the region will be primarily maritime, with a smaller number of forward-deployed air and light and heavy ground forces deployed in South Korea to deter the continued threat from North Korea, and a smaller number of Air Force and Army forces in Japan. The remaining Army and Air Force power in the Pacific would consist of reinforcements from Hawaii, Alaska, and CONUS.

The President's Budget allocates funds for procurement, military construction, and power projection that will help to equip and sustain our forces in the Pacific.

CONTINGENCY FORCES

Operation Just Cause, our non-combatant evacuation operations in Liberia and Somalia, and Operations Desert Shield/Storm have proven the enduring requirement for Contingency forces capable of responding to unexpected and unpredictable future crises. These forces must be mobile, flexible, fast and lethal. They will be composed of rapidly deployable light, airborne, and mobile heavy Army forces, a tailored mix of Air Force, Navy, and Marine Corps units, and Special Operations Forces. They would have a small Reserve component and would draw, as necessary, from the other Forces for additional resources. Also, where appropriate, they would operate in conjunction with the forces of our friends and allies, and would have an important military assistance role. We will need light and mobile C^3 systems to complement the weapons systems and platforms of these Contingency forces.

Funds allocated in the President's Budget for Special Operations Forces, on-shore and off-shore pre-positioning of equipment, rapidly deployable command and control systems, and substantial and highly effective maritime and amphibious forces, contribute to enhancing the capabilities of our Contingency forces.

BASIC MILITARY SUPPORTING CAPABILITIES

In addition to its basic military force packages, the United States will need four supporting capabilities: a Transportation Capability, a Space Capability, a Reconstitution Capability, and a Research and Development Capability.

The Transportation Capability is crucial. The U.S. must be able to project and sustain the forward military power necessary to accomplish global missions. We require sufficient capability to move substantial quantities of men, materiel, and equipment through the air and over the sea. Pre-positioned equipment, either ashore or afloat, can ease this burden, but our strategy still requires highly capable, modern and flexible air- and sealift assets. The success of Operation Desert Shield has proved this beyond any shadow of doubt. The President's Budget puts a special emphasis on airlift and sealift capability through continued funding of the C-17 aircraft, an increase in the maritime Ready Reserve Force, and a new sealift program.

Effective employment of our Strategic, Atlantic, Pacific and Contingency forces requires us to maintain an effective Space Capability. Requirements for early warning, intelligence, surveillance, navigation and C^3 dictate a wide variety of space systems. Increasing demands for strategic defense and treaty monitoring, as well as emerging tactical requirements, will demand ever-more effective spacecraft, as well as their supporting infrastructure. The ability of the United States to use any of its four force packages depends heavily on its ability to operate in the "High Ground" of space. The MILSTAR satellite program keeps us moving ahead in Space, so in order to preserve this vital program we have carefully restructured it to reduce costs. We feel the resulting program will support tactical and strategic needs effectively.

Our forces must also be supported by a broad and enduring foundation of industrialization, mobilization and sustainment to allow us to rebuild and regenerate new forces if we should see a reversal of favorable trends in the Soviet Union. In the near-term, we need to retain the option of a relatively rapid Reconstitution Capability. Over the long term, the generation of new forces will require prior investments in critical technologies, supporting capabilities (such as keeping the Selective Service System in good order) and weapon systems. This ability to rebuild, made explicit in our defense policy, will be an important element in our ability to deter aggression.

To help provide for reconstitution, the President's Budget envisions certain reserve forces being maintained in cadre status. These units would have greatly reduced manpower and training but the equipment to facilitate an efficient transition to full strength if needed. We currently plan for two cadre divisions in the Army and creation of a new status for a number of Navy frigates.

Beyond the requirement for a reconstitution capability is the compelling need for research into and development of the technologies, applications and systems of the future. Since World War II, the United States has relied on its technological edge to offset the quantitative advantages of potential adversaries and we must continue vital R&D, or risk losing that edge.

After inflation, fiscal year 1993 RDT&E Budget Authority will be 10 percent above fiscal year 1991 levels. Department of Defense Technology Base spending of $3.9 billion in fiscal year 1992 and $4.0 billion in 1993 will emphasize high performance computing and improved materials for electronics, gas turbine engines, and airframe components. All of this spending, and more, is aimed at preserving the technological edge of America's Armed Forces.

I have described for you in rough outline our concept of enduring and emerging realities, and how these realities drive our national and military objectives, future force packages and supporting capabilities. Our operations in the Persian Gulf since last August have largely validated this concept.

When Iraq suddenly and brutally invaded Kuwait, Operation Desert Shield demonstrated the importance of having forces forward-deployed—in this case a naval surface combatant task force and a nearby carrier battle group. In our new concept, these presence forces would be part of our Atlantic forces.

We also witnessed the importance of having sufficient airlift and maritime prepositioning assets to deploy quickly the air superiority air forces and the light ground forces needed in the crisis area—forces that in our new concept would come from our Contingency forces.

Then, as fighter aircraft and light ground units arrived in Saudi Arabia, we saw the initial deployments of attack aircraft, U.S. Marine Corps amphibious units, and more naval forces. These type forces might come from any of our new force packages, regional or contingency.

U.S. Army heavy ground forces and additional Air Force, Navy and Marine Corps units followed rapidly. Reserve and National Guard forces augmented operations from the very start but played heavily as this phase of the deployment unfolded. In our new concept, most of these force's would constitute the heart of our Atlantic forces. All of these forces were supported by very capable sealift, airlift, and prepositioned forces, and by command, control and communications and other systems in Space.

Our technological edge and past investment in research and development gave us the wherewithal to keep these forces flowing and sustained until the defense of Saudi Arabia was assured, and until our build-up in the region presented to the President the force options he felt necessary. Operation Desert Storm is now proving how vital all this great effort was.

OPERATION DESERT STORM

I would like to turn now to Operation Desert Storm. Let me first point out that our principal objective remains the same as it has from day one—to liberate Kuwait by ejecting Iraqi forces. We have designed a phased campaign to take advantage of our strengths and our opponent's weaknesses in a manner that holds American and allied casualties to a minimum. It is a single, coherent, combined campaign using air, sea and land forces to achieve maximum effectiveness.

In the first phase, which began January 17, we wanted to disrupt Iraq's leadership command and control, destroy its centralized air defense command and control, achieve air superiority, inflict damage on its nuclear, biological and chemical capabilities, and begin attacking its best ground offensive capability—the Republican Guard forces.

Today, 5 weeks into the operation, we have accomplished many of our initial objectives. We have severely degraded power generation and telecommunication facilities that contribute to Iraq's military capability. We have destroyed or rendered inoperative a large percentage of Iraq's command, control and communications facilities. We have done significant damage to Iraq's capability to develop and produce nuclear, chemical and biological weapons.

Our operations against Iraq's air defense radars, command centers and missile launchers and its aircraft, both in the air and hidden in shelters, have been very effective. An indication of this is that Saddam sent many of his remaining front-line aircraft to Iran to try and save them. While we remain vigilant about their potential return to the battle, the fact is that, for the time being, they remain out of action and unable to engage coalition aircraft. Moreover, Iraq has yet to shoot down a single coalition aircraft in air-to-air combat or strike a single military ground target successfully. We continue methodically to destroy hardened aircraft shelters. To date, we have destroyed over 50 percent of these structures.

As a result of our air operations, our theater commander, General Schwarzkopf, declared several weeks ago that we had established air supremacy. Coalition aircraft control airspace throughout Kuwait and Iraq and have thus been able to turn their attention to eliminating Iraqi ground forces while continuing to strike at other remaining targets.

The guidance that our pilots operate under is to attack only military targets. They are going to great lengths, at considerable personal risk, to avoid striking civilian targets, as well as religious and archaeological sites. This policy stands in sharp contrast to the policy of Saddam Hussein who, with his inaccurate SCUD missiles, is attacking only civilian areas. Mr. Hussein has demonstrated as well his indifference to the safety of his own people by placing military personnel and equipment in civilian locations, or close to religious and archaeological sites. There could be no more credible testimony to the success of our own targeting policy—Iraqi soldiers are seeking shelter in civilian surroundings because they know we are avoiding such areas if at all possible.

We continue also to eliminate the threat to coalition civilians and military targets posed by Iraqi ballistic missiles. As our tactics and information have improved, we have been much more effective in reducing the number of attacks. Patriot missiles deployed in Saudi Arabia and other countries have also done the job in rendering the SCUD missile strikes less effective. We continue to make Iraqi missiles a top targeting priority.

We have also now begun to strike in earnest targets in and around Kuwait. Our goal is to isolate Iraqi ground forces in Kuwait, cut them off, and attack and destroy them. To accomplish this, we are systematically going after Iraq's ability to reinforce and supply its army occupying Kuwait. This includes attacks on supply depots, bridges, ammunition storage, anything that helps to sustain Iraq's fighting force.

In addition, we are now striking hard at the Iraqi forces themselves. Iraqi losses, while difficult to measure precisely, appear to be extensive. We are seeing indications that our attacks on the Iraqi ground forces and their combat equipment—tanks, artillery, armored personnel carriers—are inflicting heavy losses.

However, as these attacks demonstrate, the fight is far from over. Our opponent is resourceful and adaptive, and still possesses an enormous army. The Iraqis are feeling the effects of our combat power, but we do not delude ourselves that they will give up easily. We must continue to be patient, to accomplish our objectives, and we must not allow Iraq to draw us into fighting the war on its terms.

Let me make several additional points about Operation Desert Storm. First, I must again pay tribute to the brave, dedicated and capable men and women of our armed forces who are defending our freedom and our interests even as this is written. I cannot say enough about the courage and the skill which they have displayed in carrying out the mission given to them by their Commander in Chief.

Second, I wish to point out, once again, that this is not the United States versus Iraq, but Iraq against the world. Twenty-eight different countries are now involved in the offensive operations to expel Iraq from Kuwait. Like American troops, their troops are putting their lives on the line to reverse this brutal aggression. It was Saudi and Qatari troops that led the assault on Khafji 2 weeks ago. The air strikes on Iraqi military targets and the Combat Air Patrol to protect our strike aircraft, have been conducted by Saudi, Kuwaiti, British, French, Canadian, Bahraini, Qatari, UAE, and Italian forces, as well as our own.

Finally, since we are discussing the 1992-1993 defense budget and the investment we are asking our citizens to make in their military forces, I want to give American taxpayers a sense of what they are getting for their money.

There has been some heavy criticism in recent years of the weapons we purchase for our troops, and accusations that many of the weapons are too technologically sophisticated to perform well in actual combat. Before this conflict began, armchair strategists informed the public that many of our systems would not stand up under operational conditions. Yet every American who has watched television in the past 3 weeks knows that our decade-long weapons investment is paying off every day in the Persian Gulf.

Other critics suggested that our weapons, designed at the "high end" of the technological spectrum to counter the Soviet threat, were not suitable for the "low end" regional threats we would more likely face in the future. The experience of Desert Storm has proven them wrong here, as well. We are clearly at the "high end" of technology in a conflict with a so-called "Third World" nation.

Let me give you some examples:

—The sea-launched *Tomahawk land-attack cruise missile* (TLAM) is being used for the first time in combat. Some 290 have been launched to date, by both surface ships and submarines, against some of the highest priority Iraqi targets, including command and control and nuclear, biological and chemical facilities. This system has worked almost flawlessly, with a near perfect launch rate, and virtually all of those launched struck their target with high accuracy and effectiveness.

—The F-117 aircraft has been enormously effective, able to attack heavily defended targets without warning and deliver its precision-guided munitions (PGMs) with pin point accuracy. Air Force F-15E aircraft, using the LANTIRN system, have achieved a level of effectiveness similar to the F-117. This combination of advanced aircraft and PGMs has allowed us to accomplish, with only a few weapons per target, what would have taken a massive effort during the Vietnam war.

—In air-to-air combat, we have destroyed over 40 Iraqi aircraft and they have killed none of ours. After 85,000 sorties against one of the most sophisticated air defenses in the world, we are experiencing an attrition rate of about one in 1,800 sorties—a rate unparalleled in history and well below comparable experience in World War II or the Vietnam war. This is due not only to the superiority of our weapons, but also to the superior training and skill of our pilots.

—Other new weapons systems are being introduced into the theater as quickly as they can be fielded, in some cases even before their development program was completed. The stand-off land attack missile (SLAM), the Joint Surveillance and Target Attack Radar System (JSTARS), and the Army Tactical Missile System (ATACMS) have all been used for the first time during Desert Storm, and all have performed extremely well.

—We have also demonstrated, at a marginal additional investment, how we can reap tremendous benefit from very old, but still capable systems. Decades-old B-52, C-141, and C-5A aircraft are all contributing substantially to the war effort. The Patriot missile, first developed in the mid-1960s as a weapon to defeat aircraft, was upgraded in recent years, at an additional cost of about $200 million above the $12 billion total system cost, to attack tactical ballistic missiles. The anti-missile version uses the same launchers, missiles and infrastructure as the earlier one, but adds a significant new capability, as anyone living in Riyadh, Haifa, or Tel Aviv will tell you. Extending the mission or effectiveness of proven weapons systems through low-cost improvements is another way we ensure that American taxpayers are getting their money's worth.

PRIORITIES IN THE 1992–1993 DEFENSE BUDGET

We all recognize that fiscal realities will impose limits on our requests. To arrive at what is feasible requires that we establish priorities for funding. The lessons of both ancient and recent history establish my first priority—*people*. Men and women, active and reserve, of the type and spirit that we are fortunate to have in our Armed Forces today, are my most fervent wish. This will require a conscious commitment from the Congress to provide for the fundamental needs of those whom we ask to sacrifice so much.

Lessons learned from Operations Desert Shield/Storm, Just Cause, and other recent experiences influence the second budget priority—*power projection and mobility*. Deterrence is only credible if we possess a robust means of power projection and the mobility to deploy and sustain our forces.

All of you who have visited our soldiers, sailors, airmen, marines, and coastguardsmen recognize the importance of my third priority—to maintain the *force quality* that is proving to be our most potent weapon in Desert Storm. A quality force is not cheap, but it is far less expensive than the alternative.

When we attract qualified people to our armed forces, the job is only half done. The other half is maintaining *readiness*. Without constant readiness, the quality of our forces deteriorates rapidly.

SUMMARY

The conflict in the Middle East will end, and Kuwait will again be free. Then, as President Bush said in November, all of us can get on with the business of writing the rules of the post-Cold War world.

The disappearance of the Cold War, the powerful movement toward freedom and democracy, the irresistible call to capitalism and free markets, all of these things, I believe, are progress. So operating in this new era promises to be exciting and challenging.

Crafting national security for this new era is a daunting challenge in itself. While remaining generally upbeat, fiscal constraints, uncertainty about the Soviet Union, proliferation of weapons of mass destruction, fear of state-sponsored terrorism, and the prospect of another Saddam Hussein unleashing wanton aggression on the world should give us all pause.

But I am confident, because the challenge is also an opportunity. When our country is blessed with the kind of young men and women that are now serving and sacrificing in the Persian Gulf, how can we look at it in any other way? The answer is there. And the prospect of sending our sons and daughters into harm's way without the best protection, most realistic training, and fundamental means of achieving victory is unacceptable to us all. So we must defend that answer in every forum of government. We must insure everyone understands what it means to have Armed Forces second to none and we must fight to keep them that way.

The Congress should be proud of the role that it has played in helping our Armed Forces become the best we have ever fielded. And because they are the best, they will complete the objectives of Operation Desert Storm and come home safely. I will continue to give you my most dedicated effort to insure nothing happens in the future to destroy this magnificent military.

Chairman NUNN. Thank you very much, General Powell. Secretary Cheney, I believe you wanted to wrap it up.

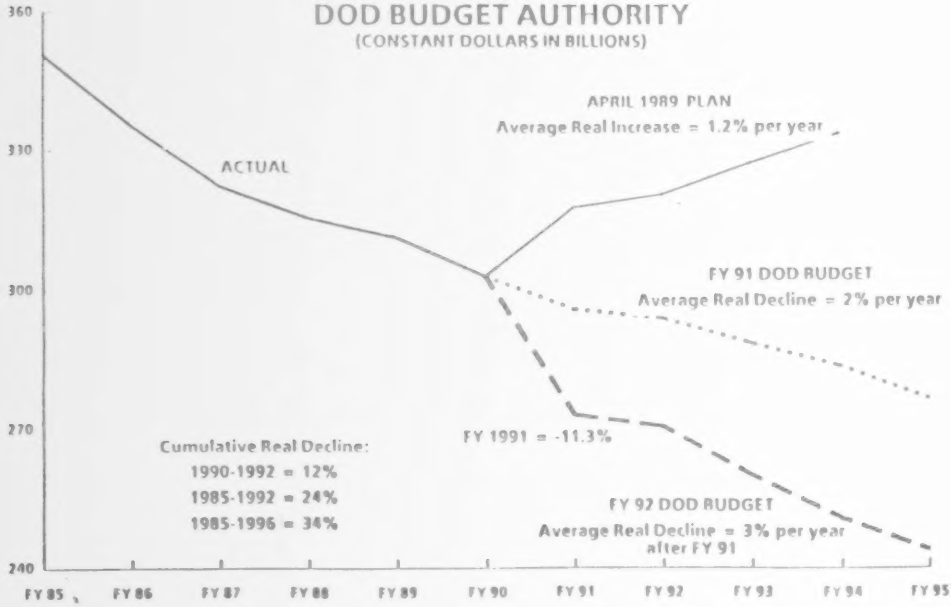
Secretary CHENEY. Yes, Mr. Chairman, if I might wrap it up. In the interest of time this morning we did not give you the whole load but I would like to ask the permission of the committee to be allowed to submit our complete written testimonies for the record.

Chairman NUNN. Without objection, your written testimony will be part of the record.

Secretary CHENEY. The second point that needs to be made, and then I want to just say a brief word on the budget, is, as I have mentioned, I know, to the Chairman and Senator Warner before, but needs to be said publicly on the record, when you are engaged in the kind of operation we are engaged in now, where you have deployed over half a million Americans halfway around the world to participate in a major conflict, you are supremely aware as Secretary of Defense, that you did not have very much to do with creating that force.

And that the force we deployed, General Powell and I were fortunate enough to inherit, and it was there, as ready as it is, well-trained and well-equipped, due in no small part to the efforts of the members of this committee, who over the years have spent a great deal of time, more time than I have, building and creating the force we have now deployed. I think that needs to be said on the record.

Mr. Chairman, if I might, just a couple of quick items on the overall top line of the budget and then we will be happy to take questions from the committee.



This is what we refer to down in the Department as "the pitch fork." It captures the essence of what has happened to the U.S. defense spending over the last 10 years, roughly, over the period from 1985 out to 1995.

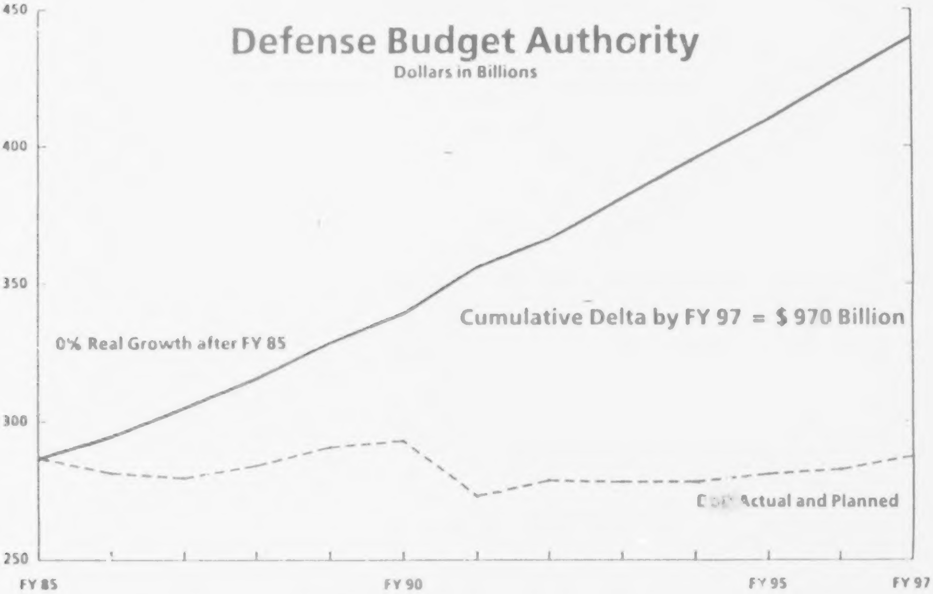
If you start from the far left it is 1985. The red line is what happened to defense spending in real terms. These are real constant dollars, inflation taken out in effect, compensated for. We have had a decline in real terms over that period of time of a significant portion, you will see.

The blue line in the upper right hand corner is the package that I recommended to the members of the committee and the President approved in April 1989, about a month after I became Secretary. That was the first Bush administration defense budget. It called for a little over 1 percent per year real increase in defense spending.

The black line in the middle on the right is the package that I submitted to the President's defense budget in January 1990. It called for a 2 percent real decline in defense spending.

The green line on the bottom is what we finally got and what is embodied in the budget agreement last fall. It represents the $18 billion reduction in fiscal year 1991 that the Congress and the President agreed to last fall. The 1991, 1992, and 1993 numbers are the ones implicit in the budget agreement, as well as 1994 and 1995 would simply project out on those same lines.

The bottom line here is, Mr. Chairman and members of the committee, that between 1985 and 1996, that roughly 12-year period of time that is embodied in the recent past as well as the package we are submitting to you today, there is a 34 percent, better than a one third real decline in U.S. defense spending.



Secretary CHENEY. This is the same proposition in a different package. The red wedge shows what we did not get that we would have required if we had simply kept even with inflation. If there had been zero increase in defense spending and we had simply kept up with inflation since 1985, we would have gotten the amount represented by the top line.

We did not get that. What we got, of course, is the bottom line, real or planned in this budget. The total change, almost $1 trillion from 1985 to 1997, that we do not get, we would have needed that $970 billion if we had kept pace with inflation. We fell $970 billion over that 10-year period of time, roughly.

Chairman NUNN. Which year's inflation numbers are you using for those assumptions, Mr. Secretary? Is that the updated inflation number?

Secretary CHENEY. I would have to check, Mr. Chairman.

Chairman NUNN. Could you furnish the assumption of that for the record?

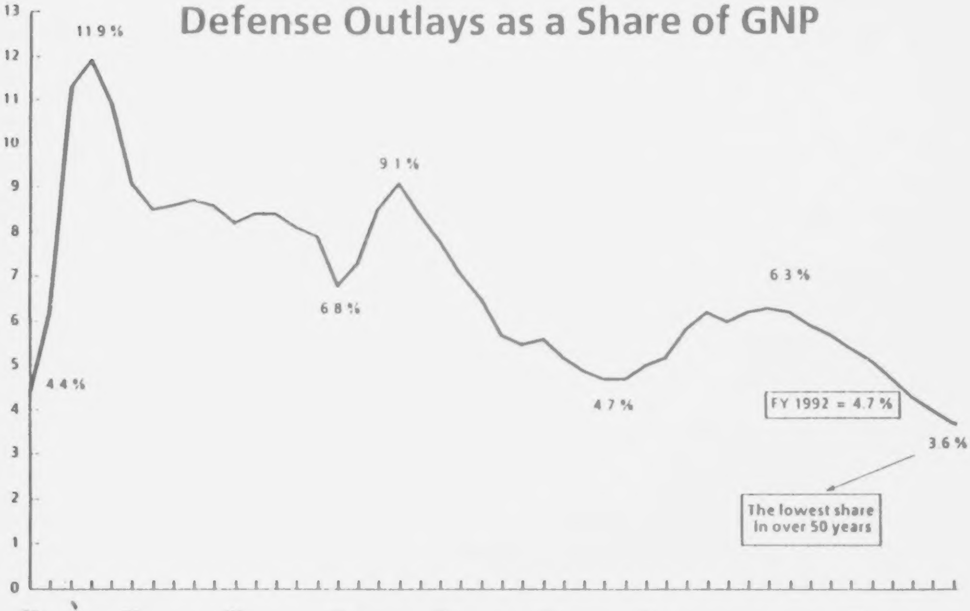
Secretary CHENEY. I would be happy.

[The information follows:]

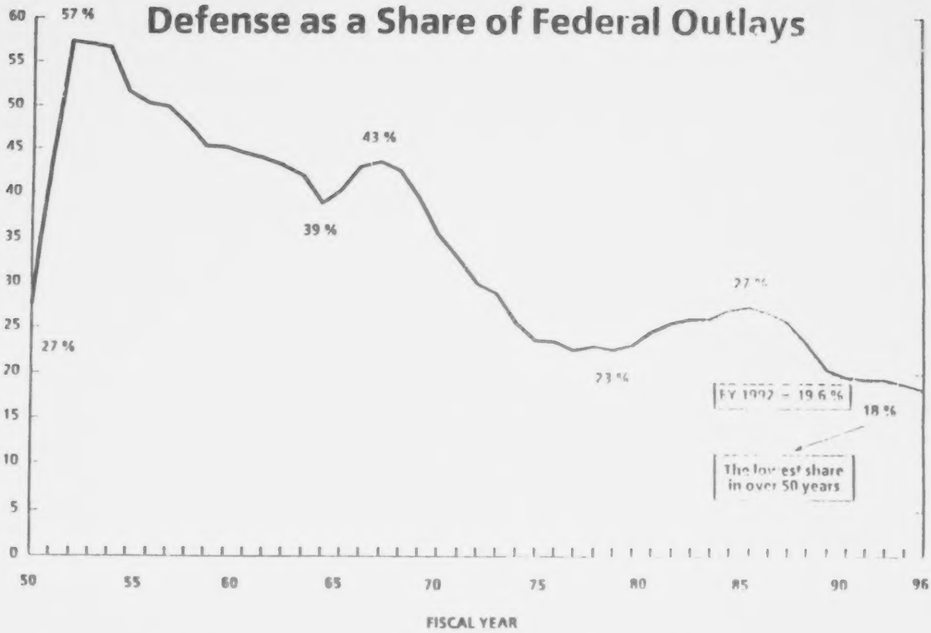
INFLATION RATES IN FISCAL YEAR 1992 BUDGET

The composite outlays inflation rates used to develop the fiscal year 1992 budget are as follows:

Fiscal years:	
1990	3.2
1991	5.2
1992	3.1
1993	4.0
1994	3.9
1995	3.7
1996	3.6


Defense Outlays as a Share of GNP

Secretary CHENEY. Two final charts. This is one of my favorites. It shows defense outlays as a percentage of gross national product. The peak, of course, was during the Korean war when we spent almost 12 percent of our GNP on defense, 9.1 percent in Vietnam, 6.3 percent at the height of the Reagan build-up. Given the package that we are submitting to you today, that 6-year plan, by 1996 we will be down to spending 3.6 percent of the Nation's GNP on defense. It will be the lowest level since 1939.



Defense as a Share of Federal Outlays

Finally, Mr. Chairman and members of the committee, defense as a share of the Federal budget: again, peak year, Korea, early 1950s, 57 percent; by the Vietnam era 43 percent of the Federal budget went for defense; by the end of this period, the budget we are submitting to you now, we will be down to 18 percent of the Federal budget, Federal outlays going for defense. In other words, 18 cents out of every Federal dollar will be spent on what we define as national defense; again, the lowest level of spending on defense as a percentage of total Federal spending in 50 years. You have to go back to pre-World War II days to find a period when we spent less.

The suggestion that the big deficit problem with which we clearly are faced is somehow driven by defense spending I think does not stand up, given the reality of the extent to which these cuts are being imposed.

Finally, Mr. Chairman, let me simply say that the plan we have submitted does track with these budget numbers. You will find when you fit all the pieces of it together, we do hit those targets in the out-years for a 6-year plan.

If circumstances change in the world, if we do not see the kind of positive development in the international arena that we have experienced in recent months, then the General and I may well be back here in a year or two to recommend to the committee that we cannot go down this far or this fast to the levels that are embodied in the budget.

But we do believe, based especially on the 2-year budget we are submitting to you today, the 1992–1993 fiscal years, that the package we have submitted will meet the Nation's national security requirements.

Thank you very much.

Chairman NUNN. Thank you very much, Mr. Secretary and General Powell. I want to thank both of you for being so responsive to our request. I know the tendency now is to have everything focus on what is happening in the Persian Gulf, and all of us are naturally focused on that. But we have to put together this 2-year defense budget on the basis of other grounds and fundamentals, and you have addressed those very well today.

I remember very well also when Senator Warner and I were meeting with you and we were talking about the future defense strategy at the time that the war was, in effect, beginning with the Iraqi invasion of Kuwait. So this is the first time in full formal committee we have had a chance to focus on it, and we thank you.

I am going to ask the clerk to impose the 6-minute rule. I know the Secretary has an engagement somewhere in the neighborhood of noon, and that is going to be very tight. General Powell has agreed to stay indefinitely after the Secretary leaves for the duration.

I will encourage members to direct the questions to Secretary Cheney that they believe need to be answered by him since he will have to depart first, although we will try to wind it up around noon.

General Powell, let me ask you a question relating to your military force packages. You named Strategic Forces, Atlantic Forces, Pacific Forces, Contingency Forces, and then force supporting capabilities, transportation capabilities, space capabilities, reconstitution capability, and R&D capability. How do these relate to the existing Unified Command, number one, and to the roles and missions of the services, number two? Are we talking about some really fundamental changes in the Unified Command?

General POWELL. Not yet. It should not be translated into a direct organizational construct looking at it conceptually.

Now there are a number of people who are worried that I am going to drive it to a Unified Command Plan (UCP) solution and a roles and missions solution, but that is not my initial thinking.

As we get smaller though, Mr. Chairman, and we go down by about a half million troops, the Secretary is fond of noting that the number of people in the Persian Gulf right now is the number of people we are going to take out of the force structure over the next several years, just as a quick indication of how rapidly we are going down, and as we implement the cuts in senior officers that have been directed by the Congress, and as we look at our headquarters arrangements, I expect we are going to have to make some drastic changes in the number of headquarters we have around, and that will affect the Unified Command Plan.

There is not yet a direct correlation between these four force packages and what the future Unified Command Plan might look like, nor is there a direct correlation to specific changes in roles, missions and functions of the individual services as contained in their authorizing statutes.

Chairman NUNN. Are you saying maybe by next year we will be addressing those fundamentals? Have you got a study going on?

General POWELL. I am responsible for conducting a Unified Command Plan study on a regular basis. We are just starting to do that.

Just for example, the size of our contingent in Europe is going down significantly, and we have a fairly large number of headquarters associated with our force structure in Europe. I want to take a very hard look at what will be needed in the years ahead to command all of the forces we have allocated to the Atlantic force package.

Chairman NUNN. One of your predecessors described the roles and missions as always in the too-hard-to-get-to box. Are you going to get to that difficult box on roles and missions as a part of this over the next year or so?

General POWELL. Yes. The chiefs and I talk about it a great deal. It is a difficult issue, but we understand that we have to talk about it and can talk about it, and, frankly, we do talk about it. I do not know that there is a need for a major change in roles and missions.

Frankly, as I look at the forces in the Persian Gulf today and look at each one of the individual services, I am glad that for the last 40 years they have been performing those unique roles, missions and functions because we have found a very good use for every capability that those individual services brought to Operation Desert Storm.

So I would not expect to see a fundamental change come out of a review of roles, missions and functions such as some of the old chestnuts about: "Let's turn the Marine Corps into the Army or the Army into the Marine Corps." We have found that we need a Marine Corps of the kind we have, and we need an Army of the kind we have, with a mix of capabilities and with unique and clear distinctions between the services. But that is not to say we cannot examine roles, missions and functions to see if we can do things more efficiently. We have to do that if we are going to cut 25, 30, 35 percent out of the size of our force and if we are going to reduce the budget by the amount it is being reduced.

Chairman NUNN. Thank you, General Powell.

Secretary Cheney, back to the present tense. Recently General Schwarzkopf was asked if he would consider his military mission successful if Iraq withdrew unconditionally from Kuwait even if Saddam Hussein might remain in power with part of his military intact. General Schwarzkopf answered that question, according to the news media reports, with the word "absolutely".

The question I have for you is the same one. Will we accept an outcome that does not include Saddam Hussein's removal from power?

Secretary CHENEY. I think, Mr. Chairman, that General Schwarzkopf accurately stated the administration's policy. Our objective is to force Saddam Hussein to withdraw his forces from Kuwait, to liberate Kuwait and restore the legitimate Government of Kuwait.

In the course of mounting military operations to achieve that objective, we have aggressively gone after his strategic military capabilities inside Iraq, and we have done, I think, a great deal of damage to his forces inside Kuwait. We have never stated that it was an objective of our policy to change the Government of Iraq.

We would not, obviously, lose any sleep if there were to be a new government come to power in Iraq. The President made that suggestion the other day. It is not an objective of our military policy to change that government necessarily.

Chairman **Nunn**. Thank you.

I am going to yield back the balance of my time, if any, and yield to Senator Warner.

Senator **Warner**. Thank you, Mr. Chairman. I am going to defer to Senator Cohen, and then I will resume my place.

Chairman **Nunn**. Senator Cohen.

Senator **Cohen**. Thank you, Mr. Chairman, Secretary Cheney, General Powell.

There was a journalist who once described one of our former colleagues as appears to have had his clothes tailored in a wind tunnel. He intended it as a compliment, I might add, but it struck me that that is somewhat of the situation we find ourselves in today, in that we have the international body politic changing so rapidly and radically that it is not, as you indicated, very wise or prudent to try to tailor our defense structure to those ever-fluctuating measurements.

We have to try to tailor it to our needs. Unfortunately, those needs often are perceived looking through the prism of demands. As you have outlined, the domestic demands upon our budget are going to intensify.

We are going to have less defense dollars, which means, I believe, fewer weapons systems. Fewer weapons systems are going to mean higher-cost per unit, so that we find ourselves in a situation where you can have super weapons or super sophisticated weapons but you cannot have many of them. That is going to be one of the predicaments that we will face in the future that we have not had in the past because of the tremendous build-up during the early part of the 1980s where we had a 10 percent increase in the defense budget.

So the question I have, aside from which ones we are going to be looking at now, I would like to shift, General Powell and Secretary Cheney, while I have you both here. You indicated we have an Atlantic concept, Atlantic force, Pacific force, and the heavy systems relegated for Atlantic, the lighter systems for the Pacific You did not mention anything about the Persian Gulf. Do you include the Persian Gulf within the Pacific region so that we are talking about a maritime strategy essentially for the Persian Gulf?

General **Powell**. I lump Southwest Asia and that part of the world into the Atlantic force concept because essentially the regional powers that are in the area are equipped with modern systems, very often Soviet systems, such as we found with Iraq, the fourth largest army in the world.

As far as the concepts, doctrine, force structure and equipment being used by Schwarzkopf, it could just as easily have been General Galvin on the central plains.

Senator **Cohen**. The point is, do you anticipate having a large or significant land base force in the Persian Gulf region, or do you anticipate having essentially a maritime force which could be perhaps regenerated or reinforced by land forces?

In other words, what is going to be the political situation in Saudi Arabia? Once this is over, is there going to be tremendous pressure for us to get most of our forces out? In turn, if we have a very significantly reduced land presence, does that mean the Saudis will need to have a significant force of its own?

If the Saudis say they have to have more equipment, more F-16s, more M1A1 tanks, more AWACS, what does that do as far as our other friends in the region, i.e., Israel?

What do you foresee in terms of the U.S. presence in that region?

Secretary CHENEY. Senator, I think there will be a great demand to get the troops out once the conflict is over—from the troops especially. They are going to be very eager to come home and rightly so. The President has made it clear that the United States is not interested in a major, long-term presence on the ground in the Gulf. We are there based upon the commitment we made to King Fahd last August that we will stay as long as we are needed, and we will leave when we are no longer needed.

Whatever develops out of that will require extensive consultation with our friends and allies in the region. They really have to take the lead in terms of focusing upon these requirements. There have recently been meetings among them, and we are in the process within the administration of thinking about how that might work. I would expect, if I were to speculate, that clearly there is justification for an enhanced U.S. naval presence in the region over what we had there last August.

We have had naval forces in the Gulf since 1949—there are lots of other ways we can have a presence there without the political baggage that goes with what some might consider a garrison. We will look at pre-positioned equipment. We will look at joint exercises. We will look at the possibility of rotating units through on a regular basis. It is really what we can work out with the folks there in terms of what is required.

Senator COHEN. Let me bring it back to the other aspect of it. You talked about the Soviets not complying with the CFE. There are serious concerns about that. And I share what you have said. In the absence of a CFE agreement or compliance with the ceilings that we have talked about, or the floors, depending upon your viewpoint, do you anticipate in the absence of such an agreement that we would go back to the preexisting land forces in Germany?

In other words, what is going to happen to those forces that we pull out of the Persian Gulf that have come from Germany or the European theater as such? Are they going back in the same numbers? Do you intend to put them back to the status quo prior to the CFE agreement? Are we going to go below that? Is there anything that is going to dictate the levels in Europe as far as those forces are concerned absent that CFE agreement? What do you believe we are going to do with the troops in the Persian Gulf once it is over?

Secretary CHENEY. Well, Senator, we would like very much to be able to implement the CFE agreement. Unfortunately, as you indicated there are currently some disputes between us and the Soviets in terms of how they perceive their obligations under that agreement.

But I think the thing that will drive U.S. force levels in Europe more than anything else is the withdrawal of Soviet forces from Eastern Europe. And assuming they live up to their commitment to be out of Czechoslovakia and Hungary by the middle of this year, which we expect them to do, and complete their withdrawals from Germany by 1994, I do not see any reason why we cannot go down to significantly lower levels than we had previously.

Of the forces deployed to the Gulf—we have not yet made decisions about which units go where once this is over with. Some of them may go back to Germany. Some of them could conceivably be brought directly home, but we have not made a decision yet unit by unit. General Powell may have something else to say on that.

General POWELL. That is exactly right. The only other point I would make, sir, with respect to the Atlantic force concept is that I want to have added justification in keeping that heavy kind of force in the structure. So it is not just on the basis of our European justification that we have had for the last 45 years. Those forces are the kind of forces we need to have in the structure for possible contingencies in Southwest Asia, because that is the kind of force we might face.

Whether they are prepositioned, forward-deployed, or located back in the United States in active and reserve configuration, the Nation needs that kind of capability and the ability to transport that capability across the Atlantic Ocean.

Senator COHEN. Thank you. My time is up.

Chairman NUNN. Thank you, Senator Cohen. Senator Exon.

Senator EXON. Mr. Chairman, thank you very much.

Let me start out, gentlemen, by welcoming you here today and to associate myself with the remarks by the Chairman and others with regard to the outstanding job that I think you and the President have done in Operation Desert Storm and Operation Desert Shield. I think you have done a magnificent job and I pray everyday for the weighty decisions you and the President make, especially during this most critical and difficult time.

I apologize for having to have you here to talk about future budgets at a time when I think there are very likely other things on your mind this morning as well as the minds of all of us on the committee.

But we do have our obligations to look to the future. As the Chairman has said, I think that the 2-year budget proposal that you advanced this morning is a tremendously interesting one.

I have had a chance to look at it in advance and then briefed on some of the strategic programs. I compliment the planning that has gone so far, at least the ones that I have been briefed on, with regard to changes in the MILSTAR program, the SDI proposal, which emphasizes some of the point defenses that some of us have suggested for a long time seem to be a significant improvement over where we were going at one time. We are still going to have to wrestle with a possible treaty violation if the SDI program being proposed is ever deployed.

I want to ask you a question or two about some of the other strategic programs, specifically the B-2, the Trident, and our whole strategic deterrence that you both have emphasized this morning as something that we have to keep in mind.

I think you put it very well earlier, General Powell. There still exists an overall threat from the Soviet Union that could change our way of life with the tremendous inventory that they still possess in nuclear weapons and we must bear that in mind and have the deterrent to make sure that anyone would have second thoughts before nuclear war is undertaken.

Let me, if I might, go into the first of questions on the B-2. Does the Department in this defense budget continue to plan an eventual total buy of 75 of the B-2 bombers, and if so, what is the yearly procurement and funding profile beyond the 4 planned for 1992 and the 7 in 1993 requested as I understand it in this budget?

Secretary **Cheney**. Senator, we definitely plan to go forward with the full buy of the 75 B-2s that we recommended to the Congress last year. This is a 2-year budget and focuses on 1992 and 1993; that is why we have those specific numbers in there. I do not have the annual buy in the out years. It is in the budget.

Senator **Exon**. I understand.

Secretary **Cheney**. And I can give that to you. I would certainly be happy to provide it for the record.

[The information follows:]

B-2

The B-2 program plan is to procure the full buy of 75 aircraft (5 retrofittable FSD aircraft and 70 procurement aircraft). The following chart breaks-out by year the remaining funding plan and aircraft buy schedule to support a 75 aircraft profile:

B-2 Funding Profile
(TY $ in millions)

FY	90/P	91	92	93	94	95	96	97	TC	Total
RDT&E	17243	1735	1563	830	332	155	10	6	0	21874
Proc	9155	2348	3202	3737	4976	5529	4886	4174	3795	41802
Total	26398	4083	4765	4567	5308	5684	4896	4180	3795	63676
Qty	13*	2	4	7	7	11	11	11	9	75

* - Includes 8 production aircraft and 5 retrofittable FSD aircraft.

We think B-2 continues to be an extremely important program, not only because of the strategic requirements of the United States, but also because there has been a lot of debate in the Congress over the wisdom of the B-2 program. It has been a hard-fought subject every year, and one of the lessons that comes out of our Gulf experience is that stealth works.

There are a couple of numbers I would ask the committee to keep in mind. In the first hours of the military operation, the air campaign against Iraq, 40 percent of the missions were flown by 5 percent of the aircraft, our F-117 stealth fighters. They have now flown a couple of thousand sorties, I would guess, with that aircraft. In all of those sorties, there has yet to be a single hit on any of those aircraft by any anti-aircraft system in the Iraqi force.

The F-117 of course is early stealth technology. It is a program that the committee approved in the early 1970s, with technology produced in the early 1980s—as a special access program. But it has proved enormously vital, its stealthy features and its precision guidance. I come away from this experience convinced more than ever that a significant portion of our force in the future must have that stealth capability. We think it is vital.

Senator **Exon**. It is going to be one or two other programs. By and large I think we could describe this budget as putting a freeze or hold without total cancellation of our ICBM modernization program. What does this budget envision, other than some continued research and development on both the MX and the Small ICBM?

Secretary **Cheney**. Senator, we continue both programs, but only in the R&D and testing phase. This will provide for the first test of the MX rail garrison missile from an actual launch vehicle, but we do not recommend deployment of either system in this budget.

We think it is important to continue our R&D activities in those areas. We think it is important that we develop the next generation ICBM. But given the current situation—on-going negotiations on START, the possibility of START II and our existing capabilities—we think it is important to keep the programs alive but not to the point of recommending to the Congress that we actually move to procurement and deployment of significant numbers either of the Rail Garrison system or the Small ICBM.

Senator **Exon**. My time is about up. One final quick question. That projection of expenditures that you outlined earlier, I take it that that assumes that we will be getting all of the promised or indicated $53 billion from countries including non-combatants that have promised to help us out with the expense of the Gulf war and also that that would come to an early conclusion. Is that correct? If not, that could change our Nation's costs rather dramatically.

Secretary **Cheney**. Senator, what we have presented here does not include the cost of Operation Desert Shield/Desert Storm. The agreement with Congress last fall was that that would be funded through a combination of contributions from our allies and a supplemental appropriation. That request from the President for supplemental appropriation to finance Desert Storm will be presented to the Congress next week.

Basically to date through the end of March, the estimates we are looking at are only estimates. Upwards of $56 billion covers the entire deployment from last August. We have pledges from our allies that would cover $41 billion of that expense.

Senator **Exon**. It is safe to say that, Mr. Secretary, the total defense outlays are going to be more than that when those figures are included?

Secretary **Cheney**. Yes, when you add together the defense outlays authorized in the budget agreement last fall, which is what is here, plus the extra over and above what will be required to finance Desert Storm. Clearly the extra amount for Desert Storm is over and above that. But again, our experience has been that our allies have picked up close to 80 percent of the added incremental cost.

Senator **Exon**. Thank you, gentlemen. Thank you, Mr. Chairman.

Chairman **Nunn**. Thank you, Senator Exon. Senator Warner.

Senator **Warner**. I will defer to Senator Coats.

Chairman **Nunn**. Senator Coats.

Senator **Coats**. Thank you, Mr. Chairman. I thank the gentleman for deferring. I just had two questions for whoever wants to answer them.

Maybe, Mr. Secretary, the first is directed to you. As I try to look at the broad picture, the outlining of the goals and the role of the United States that both you and General Powell have outlined, it is a very ambitious program. It projects forces and U.S. involvement in deterrence, in interdicting, low intensity, regional conflicts—a very ambitious, very aggressive goal, which I do not necessarily disagree with.

But as I look at the defense budget that is projected for the next 5 years the percent of GNP, the percent of the budget, the pitchfork, the decline, I do not see how we can reconcile those two roles. I do not see how we can overall structure the kind of defense force that allows us to meet all of your objectives. It seems like something is going to have to give somewhere.

Add to that the mandates which we put on you to involve yourself in drug interdiction, terrorism and other situations. I do not know how you do it.

Secretary CHENEY. Well, Senator, that is a good question. It is one we agonize over, and have as we put the budget together. There are a number of things we have done. We are clearly in the business of canceling programs, closing bases, cutting overhead, and reducing the overall size of the force structure to get down to those levels.

In the budget we are presenting to you today, the first 2 years of a 6-year package, the 6-year package does in fact meet those downward trends in spending that we presented to you. To give you just a quick idea of the way it is done, this chart shows what happens to the uniformed military force structure—Active and Reserve force structure.

FORCE STRUCTURE

	FY 1990	FY 1995
Army Divisions	28 (18 active)	18 (12 active)
Aircraft Carriers	13	12
Carrier Air Wings	15 (13 active)	13 (11 active)
Battle Force Ships	545	451
Tactical Fighter Wings	36 (24 active)	26 (15 active)
Strategic Bombers	268	181

The Army in fiscal year 1990, has 28 divisions, 18 Active. That is cut to 12 Active Army divisions by 1995. The aircraft carrier fleet is at 14; we are taking it down to 12. Carrier air wings are reduced in accordance with that. The total fleet—originally you will remember in the mid-1980s we talked about a goal of a 600-ship Navy—will have approximately 450 ships in it.

Tactical Fighter Wings go from 36 to 26. Strategic Bombers get cut. In other words, we are reducing the size of the force by a significant margin.

There are several things that leads to. We buy fewer Bradley Fighting Vehicles for the Army because we are going to have fewer divisions. We buy fewer F-16s for the Air Force because we have fewer fighter wings to equip.

The bottom line is that the only way I know to cut the budget is to cut the budget—cancel programs and cut force structure. The basic guiding philosophy that we have tried to use—and I would be happy to get into more detail if anybody wants—is the notion that we are prepared to take the force down to whatever level it is that Congress is prepared to support. But, when we get to that level we want to make certain it is absolutely the best possible force in the field.

The Chairman, General Powell, has hammered me repeatedly over the last 17 months of our association and persuaded me of the wisdom of that basic approach—that we do not want to go back to a hollow force, that if we are going to have a small force (and we are only going to have 12 Active divisions in the Army and a smaller Marine Corps, et cetera) we want them to be well-trained, well-equipped, highly-motivated, and ready to go at a moment's notice. We think that is the only kind of force that makes sense for us to field.

Senator COATS. If Desert Shield and Desert Storm arose in fiscal year 1996, could we have responded in the way in which we have responded to the situation here in 1991?

Secretary CHENEY. It clearly would be more difficult. Just to give you some numbers—and the Chairman may want to correct me on some of these—we now have over 520,000 uniformed military personnel in the Gulf, Active and Reserve. The end strength reduction in uniformed military personnel over the next 5 years is about 521,000 slots. So we are taking the force structure, in terms of Active duty personnel, down by about a fourth. We are doing the same with respect to Reserve personnel.

Today we have about seven Army divisions plus two full Marine divisions in the Gulf—9 or 10 equivalent divisions, when you add in all of the cavalry regiments and so forth. So it would be a significant part of a smaller force in proportionate terms.

We could do it, assuming the rest of the world is quiet and peaceful, and we do not have to worry about Europe or some other major contingency. When we made this last addition to the force, when we deployed the VII Corps, you remember we took two heavy divisions out of Europe and one out of the United States—the 1st and 3d Armored Divisions out of Europe and the 1st Infantry Division out of Fort Riley, Kansas.

So I would say that it clearly would be more difficult with the smaller force we expect in 1995 or 1996 compared to what we have now. What it does is task us to be even more careful than we have been to date in making certain that we buy the right things; making certain that we do not waste any resources; making certain that we structure forces that can, in fact, deploy on a rapid and ready basis.

Senator COATS. I think the answer was no, at least qualified.

Secretary CHENEY. It certainly is qualified.

General POWELL. It certainly is qualified. We would have great difficulty executing Desert Shield/Desert Storm the way we have over the last 6 months if it was 1995 or 1996.

Now with respect to getting it all to fit in this 5-pound bag we have, we are taking the force structure down significantly. That is the preferred way of doing it—taking the force structure down to that which is affordable. But I must say, getting to these force structure numbers was a very, very difficult, painful process within the building.

And the levels we are at now in the Army, Navy, Air Force, and Marine Corps are what we believe to be the base level below which we should not go in any of those services. In fact, in going down to this level of 12 Active Army divisions and 450 ships, the Nation is taking some additional risks. We will not be able to respond in the future the way we have been able to respond in the past.

Senator COATS. My time is almost up.

Secretary CHENEY. I might add to that point, if I may, Mr. Chairman and members of the committee. Obviously one of the things that might happen if you tried to do it with a smaller force is you would have to use more reserves. Instead of kicking in just the 200,000-plus that we have now called up and authorized to be activated you might have to go for the 1 million reservists who are out there and available.

So the discomfort level in the country—the extent to which we would have to create problems for a larger number of people by calling them back to active duty—would be significantly greater.

Senator COATS. I will just conclude, Mr. Chairman, with a brief, one-sentence statement. Just to repeat, it seems to me that the listing here that Secretary Cheney has stated relative to the new defense strategy—the six objectives—is going to be impossible for us to attain, given the budget constraints that are being placed on future spending for the next 5 years, and I think this committee is going to have to deal with that very important, irreconcilable problem. We are either going to have to downscale the defense strategy or we are going to have to upscale the spending; I do not see how we can do both.

I would like like my prepared statement be made part of the record.

Chairman NUNN. Thank you, Senator Coats. It is so ordered.

[The prepared statement of Senator Coats follows:]

PREPARED STATEMENT BY SENATOR DAN COATS

Thank you Mr. Chairman. I join my colleagues in welcoming our distinguished witnesses today. Secretary Cheney and General Powell, I commend you for an excellent job in difficult times, regarding both the execution of Operation Desert Storm and the job you have done in putting together the budget we have before us today. While I do not agree with its every detail, I believe you have done a fine job in a highly constrained environment.

I think it's important to reflect for a moment on what has happened since last year's budget was presented to the committee. At that time, of course, many members of the Senate were looking to slash defense spending and reap a "peace dividend." Now, just a year later, our country is at war and the peace dividend has turned into a war supplemental appropriation request.

Last year we were also celebrating the collapse of the Berlin Wall, freedom in Eastern Europe and untold reform in the Soviet Union. This year there is reason for a greater degree of circumspection. While progress toward democratization continues unimpeded in Eastern Europe, we seem to be witnessing a reactionary attempt to stop political, economic and military reform in the Soviet Union. The Soviets continue to modernize their strategic forces at an undiminished rate and have recently returned to a more hard line on arms control.

Our war in the Gulf, moreover, has illustrated the emergence of a new threat to global security—the proliferation of weapons of mass destruction and their means of delivery. It has also shown that war in the post-Cold War world is just as likely, if not more so, than during the height of the U.S.-Soviet competition.

Thus, I believe that many of the planning assumptions contained in last year's defense budge debate will need to be reassessed. Our military structure will certainly need to get smaller, and I think that the Department of Defense has done a good job setting us on this course. However, when one considers that 5 years from now we probably will be unable to respond as we did in Operation Desert Shield, it becomes clear that some serious reconsideration must take place. Do we really want to go down to 12 Active Army divisions and 12 aircraft carriers by fiscal year 1995? Maybe the answer is still yes, but then we must understand and live with a substantially reduced ability to influence world events and respond to crises.

I noted in reviewing your prepared statement, Secretary Cheney, that you also reference the possibility of reassessing current plans if the security environment should turn less promising. My only fear is that if such a turn for the worse should occur, we will already have made decisions that make it difficult if not impossible to respond. We have learned that building down is difficult, perhaps more difficult than building up. But certainly a buildup right on the heals of a build-down is the most difficult and inefficient of all options. I am curious to hear how we balance our desire to reduce defense spending with our continuing international obligations and the very substantial uncertainty that continues to shroud the international security environment.

Mr. Chairman, I hope some of these issues will be explored today and upcoming hearings that the committee will conduct.

Chairman NUNN. One thing to keep in mind is we will have less forces in Europe, presumably, over this 5-year period. An awful lot of those forces will be coming from Europe, and we will have less level. It is going to be a challenge, no doubt about that.

Senator Levin.

Senator LEVIN. Thank you, Mr. Chairman.

Let me join my colleagues in commending both of you for the leadership that you have shown. You have done a terrific job, both of you, and all of us are strong in our feelings that you have shown the kind of commitment and determination that we have needed during these very, very difficult months. You have led our Armed Forces and represented our country extremely well and we are all grateful to you for that leadership.

As you have indicated, many of us in the Congress over the past years have been involved in debating priorities and preparing for just this kind of contingency. Many of us have fought hard for additional conventional capability and sometimes, frequently, we have had to try to cut strategic and nuclear weapons in order to fund that capability.

Over the years, though, we succeeded in some very critical conventional add-ons here in the Congress. In the last few years we have added significant numbers of Apache helicopters, EA-6B electronic warfare aircraft, Sparrow missiles, C-130 transports, M-1 tanks, Stinger missiles, Hellfire missiles, TOW missiles, MLRS rockets, HARM missiles, minesweepers, and the list goes on. Those are congressional add-ons to requests of the administration over the past few years, and that has been a priority that I think the Congress has had, with a greater emphasis on conventional capability and somewhat lesser emphasis on some of the nuclear weapons systems that had been requested.

I am glad to see now that, after one test firing of an MX from rail garrison, that it is now your plan to mothball the MX Rail Garrison System, and I think that is a wise decision. You are not planning on deploying that system, and I commend you for it.

The budget still has a priority—I believe an excessive priority—for strategic systems. That will be a matter of debate over the coming months. You are still proceeding with SDI, albeit modified. You are still proceeding with Midgetman and with the B-2 numbers at the level you received last year. At the same time, there is a huge increase in SDI, for instance—over 60 percent. The F-14 remanufacturing program would be terminated, the Bradley fighting vehicle terminated, the F-16 terminated after 1993, the AV-8B aircraft would also be terminated.

This would be added to prior terminations in recent years—F-15, F-16, M-1 tank, MLRS rockets, and so forth. As a matter of fact, looking through this list in the recent new magazine of all of the equipment that we are using in the Persian Gulf, most of this would be terminated or has been terminated already. I have got real questions about that priority in terms of the industrial base, which you in particular, General Powell, have referred to—the importance of maintaining an industrial base, and also the importance of equipping with modern equipment those reserve forces which we are going to rely on more and more over the years.

So that is an issue which will be debated over the next couple of months, will be the priorities in this budget at a reduced level which you have indicated.

But I have some very specific questions that I want to ask, one about the Persian Gulf first. We read headlines in the local papers back home that our troops could run out of ammunition, and there is another story which we read in the Washington paper about a shortfall in mine clearance capability.

I am just wondering whether you can give us some quick assurance here this morning that we have adequate ammunition—and the ammunition we are talking about here is the basic munitions—and that our mine-clearing capability is where we need it. Could you just quickly give us that kind of assurance?

General Powell. There is no shortage of ammunition, and the mine-clearing capability is adequate to the task before the troops. We are taking additional steps to improve that capability and have done so in recent days.

Senator Levin. Secretary Cheney, while you are here let me ask you this question. You spent a great deal of time in your very thoughtful statement about the change in the Soviet Union and Eastern Europe, and we are grateful for the attention that you are giving to that issue. At the same time, our hearts and minds are focused on the Middle East. I think you are doing a good job in keeping the long-range picture also in front of us.

As you pointed out, President Gorbachev has taken some steps forward and now some steps backward in the Soviet Union. You have made reference to the need for reform in the Soviet Union. My question is this: Is economic development of the Soviet Union, which can only follow if there is economic reform—otherwise they cannot have economic development—in our national security interest?

Secretary **Cheney**. My personal judgment, Senator, would be that it is. The kind of internal changes that will have to occur in the Soviet Union in order for them to make economic progress—the movement toward markets—carries with it the kind of political change that we would find attractive; what we have often referred to as democratization. I think it also carries with it the need for a significant reduction in the military burden on the Soviet economy.

But short of those kinds of changes, there will not be economic progress in the Soviet Union. There will not be outside investment. There will not be the creation of capital. And the result under those circumstances, it seems to me, would be that they will continue to slide.

If they do reform economically and make those decisions to reallocate resources away from the military, I think that clearly would be in our interest. I think it would create a Soviet Union that is easier for us to deal with in the future, that understands some of our concerns and is generally less threatening not only to the United States but to their other neighbors.

Senator **Levin**. My time is up. Thank you.

Chairman **Nunn**. Senator Warner.

Senator **Warner**. Thank you, Mr. Chairman.

Mr. Secretary and General Powell, forgive my departing the room on one or two occasions here. You are probably aware now that Saddam Hussein has just been on international media for some 25 minutes, and I have tried to get an analysis of that to see to what extent it might bear on the course of this hearing.

I am not sure what communication you two may have just received, but essentially the information and synopsis that I have is that he rambled on for some 20 or 25 minutes in a rather incoherent manner without coming to any conclusive ending, except that it could well be martyrdom. So I do not know that we can glean anything from that, that he wants in a constructive way at this time to participate in a dialogue, be it with the Soviets or others, to try and bring about some conclusion to these hostilities. Do you have any different view on that?

Secretary **Cheney**. We have only a very limited report at this time, Senator, and it does not add anything to what you have already said. Obviously, the conflict can end tomorrow if he will get out of Kuwait, withdraw his forces immediately from Kuwait. So far we have not seen any indication on his part that he is prepared to do that.

Senator **Warner**. I judge, General Powell, that the Commander in Chief, yourself and the Secretary are prepared to carry out whatever orders at whatever time the President, in consultation with other world leaders, may conclude is in the best interest to prosecute this action militarily.

General **Powell**. Yes, sir.

Senator **Warner**. I certainly, in our brief visit of some 3 days, judge that the troops are in a state of extraordinary readiness and that their attitude toward bringing about a conclusion to this thing militarily is superb.

I want to start, Secretary Cheney, again joining the Chairman, Senator Levin and others who have commended you on a very thorough analysis of the Soviet position. The Gulf situation naturally has commanded a good deal of our attention, but therein is a long-term challenge that we have got to constantly plan for and against.

I go back now to 1 year ago when you were in this chair and presented to us the 5-year program in the context of the 1991 budget, and now today presenting the 5-year program in the context of the 1992 budget. What changes have you made in the 5-year, shall we say, baseline that you laid down last year and that you have laid down this year to reflect the again dramatic changes in the Soviet Union in the past few months?

Secretary CHENEY. Senator, I think if we hark back to this time a year ago, the Berlin Wall had come down in November of 1989, just a couple of months before. The budget we submitted last year, the fiscal year 1991 budget, was really sort of a transition budget, if you will. We are now technically on a 2-year budget cycle in terms of what we present. Ordinarily what would have been presented last year was a modest revision to the budget prepared the previous year.

We did not do that. We forecast significant reductions in the overall level of spending that ultimately were embodied in even deeper cuts in the budget agreement. But that was, in part, because we did not know for certain, we could not be confident of exactly how things were going to sort out. We had not had time to work with our allies in terms of our strategy in Europe. We had not had time to do the analysis within the Department on the kinds of overall force structure changes that we thought were appropriate—the kind of fundamental review of our strategy and military posture that we have conducted now over the last year, at the direction of the President.

That review culminated in the briefing General Powell and I gave, August 2, to you and Senator Nunn and the other chairmen and ranking members of the key military committees, and was embodied in the President's speech at Aspen last year. And all of that then folds into here.

It shows up most especially in terms of the altered situation in Europe, that change in the assumption that we have to be prepared for global conflict with the Soviet Union that begins with a Soviet-led attack against NATO. Once you change that, once you do away, for example, with the obligation to have 10 divisions in Europe within 10 days of a decision to mobilize, then out of that falls a series of other consequences that are embodied in this budget. With significantly smaller forces, you procure fewer items. Those are the kinds of concerns and considerations that I think are embodied here.

This budget more completely captures our view of what is required, given the changes in the world that have occurred in the last few years, than was possible a year ago, simply because we have a year under our belt and have had time to think about it more.

Senator WARNER. The refinement that I was seeking to elicit from you was I think when we were here a year ago we did not anticipate the resurgence to some degree of, should we say, the right wing military forces in the Soviet Union and the disintegration, to some extent, of the ability of President Gorbachev to lead.

Now my question is, have you taken some, should we say, retractions or changes in that guide plan of 5 years ago to reflect these unanticipated changes we have seen here primarily in the last 6 months?

Secretary CHENEY. I could not go to any one particular item in the budget, Senator, and say this is something we put back in because the progress toward reform in the Soviet Union appears to have slowed or perhaps been reversed. It is more of a conclusion based upon the fact that, given the change in the Soviet Union, and I think our attitude toward them that there was a great sense of hope and optimism a year ago, not only for the Soviets but also for Eastern Europe.

Since then we have seen, unfortunately, the problems develop in the Baltics, continued slide in the economy, and the inability to adopt a program for economic reform. But even though we are more pessimistic now than we were, say a year ago, about the prospects for reform, long-term reform, in the Soviet Union, it is also true that from a military standpoint, in terms of their ability to project power beyond their borders, it is significantly reduced. Perhaps not as a matter of conscious policy by the Soviet Government, but certainly it is reduced as a result of further erosion of their economic base to support those efforts.

Senator WARNER. Then let me see if I can summarize. Basically what you are saying is that since your responsibility, together with that of Chairman Powell, is security arrangements you really have not made any substantial readjustments in the 1991 and 1992 budgets to reflect those changes?

Secretary CHENEY. I have not made any sort of reversing, going back saying it is a more hostile world and, therefore, we need more. We have dealt with Desert Storm on the side because of the supplemental arrangement.

Senator WARNER. I understand that.

Secretary CHENEY. What we have been able to do is to flesh out our long-term plans and proposals based upon what, in essence, is the collapse of the Soviet position in Eastern Europe and the reduced Soviet threat as a result of the end of the Cold War.

Senator WARNER. That fleshing out has not been changed as a consequence of the deterioration of Gorbachev's authority here in the last 6 months?

Secretary CHENEY. I think that is correct.

General POWELL. That is correct. In fact, Senator, the force structure you see today is smaller than the one we presented last year.

Senator WARNER. Thank you.

Chairman NUNN. Thank you, Senator Warner.

Senator Thurmond has another important meeting. Senator Kennedy has agreed to yield to Senator Thurmond. He would be recognized next, and then resume his place in line. Senator Thurmond.

Senator THURMOND. Thank you very much, Mr. Chairman. It is very gracious of you, Senator Kennedy, and Senator Warner to allow me to go ahead. I have three meetings going on at the same time—-Antitrust, Labor and here—so I am trying to meet my responsibilities in all three.

I want to say that we are very proud of the troops in the Persian Gulf. I think they are the finest troops we have ever fielded. Secretary Cheney, I want to congratulate you and General Powell for your outstanding leadership and the superb job you are doing.

Mr. Chairman, I ask unanimous consent that my opening statement follow that of the distinguished ranking member, Senator Warner.

Chairman NUNN. Without objection.

Senator THURMOND. Secretary Cheney, you rightly stated in testimony before the House Armed Services Committee that the Soviet Union is the only country that can destroy the United States, yet the defense budget submitted to Congress on February 4 reduces substantially the funding for strategic modernization. Given the potential for civil war in the Soviet Union, the relentless Soviet strategic modernization program, and the reemergence of traditionalists in the leadership ranks, how can we justify such a reduction in our strategic modernization program?

Secretary CHENEY. Senator, I think we are able to safely restructure our strategic modernization program, partly because of the events we see in the world, but I will not deny it is also driven in part by budget considerations. In essence what we are doing is anticipating that there will eventually be a START agreement that will reduce the number of ballistic missile warheads on both sides.

This has a couple of consequences. It means smaller strategic U.S. forces. It also means fewer targets in the Soviet Union. The change in the status of all of those governments in Eastern Europe from Communist regimes—part of the Warsaw Pact threatening to NATO—to democratically-governed regimes, significantly alters our requirements in terms of our strategic forces.

It is reflected in decisions to do such things as to stop the Trident buy at 18, to go slow in terms of deployment of the next generation of intercontinental ballistic missiles, and also to downsize the B-2 force from the original 130-some down to 75. We think it is safe.

The other point I would make, though, is that we are recommending a significant increase in strategic defenses. We really believe very deeply that it is vital for us to focus some of our resources on developing our defensive capability against that strategic threat. We think we have valid experience that will allow us to do that. One of the most significant increases that is embodied in this budget specifically goes to the SDI program.

Senator THURMOND. General Powell, during the President's State-of-the-Union Address he announced a restructuring of the SDI program to a more near-term objective of trying to provide defenses against a limited ballistic missile strike. In your opinion, does this mean that the country does not need to develop defenses for the JCS-validated threat for phase 1, or one readjusted for START? In other words, should we only develop defenses to meet limited ballistic missile strikes?

General POWELL. I believe the President's program is a sound one to take these steps to deal with the accidental launch concern that we have as well as the emerging ballistic missile threat that exists in a number of countries in the world.

Having said that, though, the JCS continues to believe in the phase 1 requirement for the reasons I stated earlier, that the Soviet Union does remain the one country in the world that can destroy us and our way of life. So while still believing that there is an ultimate requirement for phase 1 and for a full SDI program, within that we can fully support the reoriented program moving toward GPALS protection, the GPALS system. And we do not believe that those positions are in any way inconsistent.

Senator THURMOND. General Powell, by all accounts the START talks are on the verge of collapsing. Based on this scenario, is it realistic for this Nation to stop production of the MX missile and significantly reduce the rail garrison program while the Soviet Union is continuing its modernization program?

General POWELL. Senator, we are concerned with continuing Soviet modernization of all of the legs of their triad, and I do not quite hold the same pessimistic view that you have expressed with respect to the START Treaty. I hope we can get a START Treaty. I think it is an important treaty to keep working on. I think it is in our Nation's interest to conclude a START Treaty, as I think it is in the Soviet interest to conclude a START Treaty, so we can cap the production of nuclear systems.

At the same time, looking at where we are and looking at the budget realities that we are facing, I believe that the Secretary has made a prudent decision at this point by finishing off the development of the MX rail garrison program so that we can go forward at some future time, should we have to, and with the program he has structured for the Small ICBM to keep it in development.

Senator THURMOND. Secretary Cheney, the fiscal year 1991 defense authorization bill reduced the Nation's military force structure by 100, 00. In the budget before us, you are proposing to cut another 90,000. Can the Defense Department achieve these reductions in view of Desert Storm? If not, do you need legislative relief for fiscal year 1991?

Secretary CHENEY. Senator, we may well need fiscal relief for 1991. I have not addressed that today because we have focused on the 1992–1993 package. But given what we have had to do in order to handle the mobilization for Desert Storm, keeping people in the service, even those who were scheduled to get out and, of course, the activation of a large number of Reserves and Reserve units, we may well need relief from the end strength numbers that Congress imposed last fall.

We will be addressing that with the committee later on, in the next few weeks, once we have a better fix. Obviously, that will be affected significantly by how long the current conflict lasts. The sooner we can wrap it up, the sooner we can get back on the path that we had originally hoped to be on.

Senator THURMOND. My time is about up. General Powell, just a short question. Are you supportive of the restructured MILSTAR program that has recently been submitted to the committee? Will this restructured program provide the minimum necessary capability to meet your communications requirements?

General POWELL. I am very supportive of it, Senator. I participated in the restructuring of the program, and I believe it will meet our minimum requirements. It is a program we really ought to solidly support.

Senator THURMOND. Thank you very much. Thank you, Mr. Chairman.

Chairman NUNN. Thank you, Senator Thurmond. I want to congratulate you for that review on MILSTAR. I think it was a good review. I have not seen all the results of it, but I have gone into some details and I really think it points in the direction that I personally believe we ought to be going in. I think you have adjusted the program very substantially and, I believe, in the right direction.

On the personnel numbers, I hope we can work that one out together, because the philosophy of what we tried to do last year with our end strength numbers, Mr. Secretary, as you well know, was to get the end strength down but to do so without hardship on the troops. So we tried to project ways to do it that would basically be attrition, retirement, so that there would not have to be substantial numbers of RIFs.

Desert Storm may change that, and I would think this committee would be receptive, as we see what those real numbers are, to making adjustments in keeping with that philosophy that has to be adjusted to reality.

Secretary CHENEY. We will be happy to work with the committee, Mr. Chairman.

Chairman NUNN. Senator Kennedy.

Senator KENNEDY. Thank you, Mr. Chairman. I, too, want to join with the others on the committee in commending Secretary Cheney and General Powell. This is the first time, of course, the country has been at war in 20 years. We have had a major restructuring of our whole defense forces with the changed situation in the Soviet Union, and we have two individuals who have broad experience, with Secretary Cheney having served in the White House under a President and General Powell having responsibilities as the national security officer and therefore brings a broad perspective to the responsibility he has now. I think the country is fortunate to have their continued service.

I, too, want to join in recognizing the extraordinary courage and dedication of the personnel in the Desert Shield operation. We have seen, Secretary Cheney and General Powell, a different army that is involved in this operation, and I would like to focus for a moment on many of the challenges which we not only face—and they are demonstrating that they are prepared to face those challenges with courage and dedication—but also that their families are facing here in the United States.

Only 20 percent of those that served in Vietnam had families; now it is close to 60 percent, with increasing reliance on the Reserves and National Guard units. This kind of pressure has brought new kinds of concerns, I think, for the families that are left behind. A number of us—Senator Glenn, I know, Senator McCain, and others—have been attempting to work with a system. For example, with the Reserves, this is the first time we have had the kind of Active Reserve component since 1961 during the Berlin crisis.

So there are a lot of pressures on that support system for the families, and I hope, Mr. Secretary and General Powell, that you will work with us so that the kinds of separation and potential loss that the servicemen are going to experience, the kinds of pressures that are on the families here at home, are going to be minimized. This is something I think is important.

My first question comes to the comments that have been made by General Schwarzkopf in the last couple of days, and I think there are two points that he has made. One is that the Iraqi army is on the verge of collapse, and second that the aerial bombardment of the various Iraqi forces continues to be effective. He talks about reducing the Iraqi tanks, for example, by 100 a day.

Recognizing we have minimal casualties in that, far less than was even generally assumed in the beginning, in the conduct of the air war, and given these observations by General Schwarzkopf, if you have got a winning hand, why is there a temptation to fold it? In other words, what would possibly be the rationale not to continue the course that we have at the present time, given the observation of the commander in chief on the ground that believes that the Iraqi army is on the border of collapse and that the air war as being conducted today is extremely effective?

Secretary CHENEY. Maybe I will take a shot first, Senator, and then ask General Powell to respond as well.

There is no question but what the air phase of the campaign has been enormously effective. I cannot find a historic precedent for what we have been able to achieve in the efforts against the Iraqi forces, against Iraqi strategic targets, and the relatively low loss on our side in terms of casualties. No one would deny that, or that we are continuing to make progress.

But I am also persuaded, based upon military advice of our senior commanders, there comes a point at which in order to have the air campaign continue to be effective it also makes sense to bring into play other phases of our capabilities, and that you need to look both at our ground forces and our amphibious forces in that regard.

The great success, we think, of the U.S. forces is the combined effect of those different phases of our capability, and the synergistic effect it might create. A decision about going forward with other phases of the campaign is certainly one the President is going to have to make, and he will do it based upon sound military advice that takes into account not only our desire and commitment to win, but also to do it at the lowest possible cost in terms of American lives.

General POWELL. I would certainly agree with everything the Secretary said. We have always seen this as a completely-integrated campaign. The air campaign phase will never stop so that something else can begin. If it is necessary and appropriate and based on the recommendation from General Schwarzkopf to use other elements of combat power available to us, the President will make that decision.

It is also, I think, fair to say that we hope the air campaign in and of itself, all by itself, will cause our opponent to change his mind in due course. In due course we may wish to force him to change his mind, and that means ejecting the Iraqi army out of

Kuwait, not simply waiting for the Iraqi army to make its own mind up when to leave Kuwait.

Senator KENNEDY. Well, given, as I say, that report of the General, he is talking about an attrition rate that no army can survive, portrays the Iraqi forces being demoralized, beset with deserters. He talks about again our assessment is on the verge of collapse. He talks about the loss in tanks of more than 100 a day. Even accepting your explanation that maybe at some time it is appropriate that you are going to have a balance of forces that are going to be necessary to move in, it would be very difficult, given his military assessment, I would think, to assume that time is now.

General POWELL. You are just taking the headline out of his overall interview. He went on to say that it is still a force that is capable, coherent. He said he is neither over-estimating nor underestimating that force, and he also indicated that he could come up with 15 or so scenarios which could change his thinking. And 100 tanks a day is not necessarily an everyday phenomenon. The fact of the matter is, after 5-plus weeks of the most intense air campaign ever seen, that force is still there. It is able to fight and in fact 2 hours ago shot some SCUDs at us.

So all of those factors have to be weighed, and I can assure you that the advice we take to the President is advice that we get from General Schwarzkopf and is then examined by the Joint Chiefs of Staff before we bring it to the Secretary or to the President. So we do not ignore General Schwarzkopf's views and advice and the decision that will be ultimately made by the President will be very strongly shaped by what the CINC says.

Secretary CHENEY. Senator, let me just add to what the General has said. We have tried very hard throughout this entire conflict to be careful, methodical, extremely sensitive to the obligation we have to the forces that we command. To date, I think we can safely say that we have in fact operated in as cautious a manner as possible while still achieving our objectives. After some 36 days of operations we have a total of 22 U.S. combat aircraft losses.

We are not eager to do anything that is going to cause unnecessary casualties or loss of life, especially where Americans are concerned. But we also have a situation where we are actively engaged in combat, where no one should mistake the situation and assume that we can wrap this conflict up without additional losses. All of that obviously is a necessary part of modern warfare. We will do our level best to be true and consistent to those principles that have governed our operation for the last 36 days.

Senator KENNEDY. Thank you. My time is up, Mr. Chairman.

Chairman NUNN. Thank you, Senator Kennedy. Senator Mack.

Senator MACK. Thank you, Mr. Chairman.

I, too, want to express my feelings as to the accomplishments of this Nation with respect to the prosecution of this war. I think each of us has expressed our feelings, not just personally, but in a sense a reflection of what we are hearing back home from our constituents, from the people who live in our States.

I had the opportunity during this past week to go visit a Martin Marietta plant, for example, in Orlando. And I have got to tell you there is a great deal of pride. You can just see it exuding from those individuals wearing T-shirts, for example, that say "SCUD

Busters" on them, the pride in what they have accomplished and the realization that what they have accomplished, in effect, is a reduction in the loss of life.

I see it. They feel it. And frankly our entire Nation feels it.

So I think the performance, again, of our young men and women, the performance of our President, the performance of the Congress, the military leaders and the two of you, really, makes America proud. I just want to express those feelings. It is not often that we have the opportunity to do that.

The issue that was raised by Senator Coats, to me, is a fairly significant one. And that is, what do you project our ability to be in 1995, 1996, if we had to react to this kind of a situation. And I must conclude that the reaction I had from your reaction to his question was not very positive.

I am not being critical of you for making that statement. I think you are trying to indicate to us exactly where we are headed with the commitments that we have made with the size of the military budget over the next 4, 5, or 6 years.

My own personal experience in both the Congress and in business, over some 25 years now, has been that generally you make the best decisions when you have the greatest degree of flexibility, when you have the largest number of alternatives to choose from.

One of the conclusions that I drew from your response to Senator Coats' question is that the alternatives that the President would be able to choose from at some point in the future on a conflict such as we are experiencing today would be much smaller, that maybe he would not have had the option to use military force as we have seen it today. And that is concerning to me. Especially when I add to that, through the written testimony and your verbal comments here this morning, as to your concerns about the Soviet Union's strategic capability that I sense is not declining.

The concern about the differences with CFE—I would like for you to indicate what those differences are and how you think that they are going to be cleared up.

The delay in the START talks is being expressed by many as a result of the military in the Soviet Union having a stronger voice. There are many of us who have a feeling that maybe those START talks may not, in fact, be concluded. And then you add to that the use of the military force by President Gorbachev to impose his will on the Baltic states and it really does concern me.

The bottom line, I guess, my feeling is that the decisions that are being made with respect to the future capabilities of our military are still being driven by the euphoria that we felt as a result of 1989 and 1990 and the very real pressure that you have got to feel as a result of the budget agreements that we have reached.

What I conclude as a result is that the risks to our national security have been enhanced as a result.

That is a rather long opening statement for me, but I would be interested in your response to those feelings and in a sense, to not only make me more comfortable, but to assure our Nation that the kinds of commitments that we have made to our national defense budgets and so forth are adequate.

Secretary CHENEY. If I might, let me make a brief comment, Senator, and then ask General Powell to comment on what we would look like in the future, if we did this.

I think it is important to remember the time scales we are talking about. We are in the middle of fiscal year 1991, of fighting a war in the Middle East, we are submitting a budget for fiscal year 1992–1993, the fiscal year that begins next October, and at the same time we are giving you, by law, a 6-year defense plan. It is not only 1992 and 1993, but the 4 years after that in terms of overall funding levels.

I think the other key point to remember is that Desert Storm/Desert Shield is being financed on the side, that it does not come out of this budget directly. We did not add incremental cost. We funded it in a different budget.

Senator MACK. I fully understand that. But, again, I am reacting to, in essence, would we be able to do 5 years from now in the Persian Gulf what we are doing today?

Secretary CHENEY. It would clearly be more difficult, but I will yield to the General.

General POWELL. It would be a lot more difficult. We could not have done Desert Storm/Desert Shield in a 5½ month period of time.

Senator MACK. What are the critical areas that will be affected? Again, suppose you had to do this in 5 or 6 years.

General POWELL. Most of the armored divisions and mechanized divisions over there we have in the force structure because of our NATO role. We took an entire Army corps out of Europe while still being able to leave an Army corps in Europe. I have a hunch that 4 or 5 years from now there will be only one Army corps in Europe, so we could not have drawn on that capability.

Cutting the budget means cutting the budget. I would like to keep 18 Active Army divisions. I think the Nation would be well-served by a 600-ship Navy. I would like to see a lot more tactical fighter wings, but the Nation has made its choice.

The Nation has said that in light of what has happened in Europe, and significant things have happened in Europe. I mean, two armies are no longer facing one another, one army is in retreat. Germany is reunified. Notwithstanding the problems in the Soviet Union, the Soviet army is leaving Czechoslovakia and Hungary, and we have good reason to expect in due course that they will leave Poland and Germany. That is a fundamental change which we have to react to.

I would like to see a larger force structure. As I said earlier, this is the absolute base, in my judgment. But I would like to see more Army divisions. I would like to see a larger Marine Corps than we are going to be able to afford. And I wish it was not necessary to go down to 450 ships or to go down to the 26 Tactical Fighter Wings. But the choice we have been given is to do that, or to keep this structure larger but then allow it to hollow out because we cannot support that larger structure with operations and maintenance and training money or with the equipment for a larger structure.

So the Nation has made this choice and we are trying to give you the most balanced force we can for the dollars that the Nation has said will be available to us. And it presents the Nation with increased risk. Not so much in Europe, but in other parts of the world. Nobody would have justified the kind of force structure we are now using in Operation Desert Storm if I had come and testified that we needed it for Iraq.

Fortunately, we had it in the structure because we needed it for the Soviet Union. With the Soviet threat diminished, I am trying to make the case that in our Atlantic needs, we better keep some of these forces around because there are Iraqis and other folks who have this kind of capability and equipment.

The answer in sum, Senator, is a smaller budget means smaller forces. Cut the budget, we cut the forces with an increased risk to the Nation.

Chairman NUNN. Thank you, Senator Mack.

I am going to have to start calling time if we are going to give everybody a chance to ask Secretary Cheney their questions. Senator Dixon.

Senator DIXON. Thank you, Mr. Chairman.

Mr. Secretary and General Powell, I thank you for your continued good work and thank you for your presence here this morning.

As you know, I am the Chairman of the Subcommittee on Readiness, Sustainability, and Support. I wanted to talk to you a little bit about the ammo question. When you showed the charts, I agree very much with what you say that this is a very dramatic reduction that we have experienced in the last decade or so here in the Congress.

And I want to point out that in fiscal year 1982 we spent $2.3 billion on Army ammunition. In this fiscal year, 1991, we appropriated only $1.4 billion. In fiscal year 1992 you have requested $1.2 billion, which is half of the 1982 level and represents less than a third of the 1982 budget's buying power.

Frankly, I am concerned about a couple of things and that is what I want to get to here. First of all, that we might not have adequate ammunition stocks, particularly the newer munitions to sustain a lengthy conventional war. And second, that reduced funding levels may have eroded our ammunition manufacturing capacity to the point where we may no longer have the surge production capacity we need.

At the current level of funding for Army ammunition, I think it is becoming difficult to sustain an adequate ammunition production base. More and more companies are going out of business. It will be difficult to reconstitute, in my view, that capability quickly in a future crisis.

Government-owned production capacity is being eroded. There are currently 15 active Government-owned Army ammunition plants. Current funding levels simply will not sustain this number, which is why of course the Army announced plans to close seven active Army ammunition plants by 1994.

Now this committee has tried to protect the ammunition accounts from even deeper cuts. Last year, for example, Congress and the administration agreed to cut the defense budget by $18.5 billion, as you know. Our committee was able to insure that the Army ammunition accounts were spared further cuts.

Over the years my subcommittee has added funds to the budget request for 25 millimeter Bradley ammo, improved M-1 tank ammo, and 155 millimeter artillery rounds. In 1989, as you know, we were able to restore $100 million in proposed ammunition cuts and in 1990 an additional $180 million.

I would just like to ask you whether this has been carefully evaluated and whether in the supplemental that will be coming to us shortly, you are going to be addressing any of these needs or whether you consider the inventory adequate in all reasonable scenarios that you can envision.

Secretary Cheney. If I might——

General Powell. I will take that. I would prefer the Army to explain the exact funding requirements for each of their ammo plants and DODAC lines, Senator.

But as a general proposition I would like to start by going back to an earlier point I made. For 40 years we were looking at a particular scenario, high-intensity conflict beginning within a few days after warning with two of the most powerful armies in the world facing each other over a wire fence.

We now see a buffer zone developing, hundreds of miles between these armies with both armies going down in size and the political underpinning of that conflict going away, the Cold War.

We cannot keep buying the way we used to buy because those fundamental assumptions have changed.

At the same time we want to make sure that we have an industrial base capability there so that if we have guessed wrong and the situation starts to return to the old days, we can reverse it.

So I share your view entirely that we have to make sure that we have some kind of adequate, warm industrial base. But we certainly cannot keep all the ammo plants going that we had kept going during the period of the Cold War. Something has got to give.

With respect to newer kinds of ammunition, they are obviously not in the same quantities in our inventory as the older types of ammunition because we simply have not been producing them as long. The Bradley 25mm round falls into that category.

The supplemental that you will see will deal with this issue. And I have not seen it in all of its detail yet, each service has contributed to that, but it will deal with those items of ammunition that we think we will have the greatest need to replace. Not to just replace everything we have used in Operation Desert Storm, but also with a look to the future as to which items we really need to replace because they are needed for the future environment we are looking at.

Ammunition Funding Requirement

The Army intends to continue with its consolidation of the ammunition production base by inactivating and laying away seven ammunition plants. The subcommittee previously added funds to ~~the budget~~ request for 25mm Bradley ammunition, improved M-1 tank ammunition, as well as 155mm artillery ammunition. In addition the supplemental request includes $128 million for the 25mm Bradley ammunition, $194 million for the tank ammunition and $34 million for the 155mm artillery ammunition. These additional funds will minimize and/or eliminate breaks in production and increase our stockage level for these ammunitions. Funds were not requested in the supplemental for 155mm M864 artillery ammunition because of significant prior year undelivered quantities of that ammunition, however it is programmed in the fiscal year 1992 request. The fiscal year 1992 budget requests $40 million for 25mm Bradley, $457 million for improved tank ammunition and $121 million for 155mm artillery ammunition. The funding of these rounds will maintain production in the near term but it does not impact on our strategy to consolidate the ammunition production base.

Senator DIXON. Well, I would want to support that. Mr. Secretary, did you have any contribution? I wanted to ask one thing about the C-17 before my time is up.

Secretary CHENEY. No, Senator. I would concur in the Chairman's statement.

Senator DIXON. Thank you very much. I agree with everything both of you said about the C-17. I was in the readiness room at Scott Air Force Base in the very early part of the Desert Shield operation and saw what they were doing sending those C-141s over there—I think a 65-hour round trip with seven refuelings. Splendid work, very impressive to see, frankly.

The one thing that impressed me also was that those folks right in the middle of it were saying, we really need that C-17. We really need it. Now, I appreciate all that has happened in the past. There were some foul ups, particularly by the manufacturer that I take into account. But let me ask you this. I am told that they are going to fly one hopefully in June. And I would ask you whether there is a possibility that some of us could cooperate with you in an attempt to ramp up the C-17 this time. You are asking, I believe, for 6 in this budget and 12 in 1993. I really feel very strongly that this operation demonstrates dramatically that we ought to have some more C-17s.

Secretary CHENEY. Senator, I share the Chairman's view when he mentioned in his testimony that our strategic lift capability is indeed a national asset. We use it for all kinds of things all the time. As a result of Desert Shield and the deployment, we are absolutely flying the wings off of the C-141s and the C-5s that are currently in the fleet, putting thousands and thousands of hours on them. We badly need that replacement aircraft.

I think the C-17 is the key. We were already a long way down the road in terms of the program. The first flight is scheduled for this year. As far as I know, it will indeed take place this year. We have been working hard on the program to try to make certain that we get all of the bugs worked out of it. It is a complex piece of equipment.

I was not involved in the early decision to buy exactly that kind of capability. It was designed to have a lot more capability in terms of its size, in terms of the kinds of loads it can carry, in terms of its ability to operate on the ground, which is key in terms of the total amount of traffic you can move in a particular area. It is a high priority item for us, no question about it. We will be happy to work with the committee to do everything we can to see to it that we bring the program in as quickly as possible.

Senator DIXON. Well, thank you, Mr. Secretary. I would again observe if it does fly successfully in June, there would be an opportunity before the end of the mark-up, but certainly before the conference committee result was finally obtained, to do something to ramp up, I would like to say I would be very supportive of doing that. And I believe there is a strong case to be made. I thank the chair.

Chairman NUNN. Thank you, Senator Dixon.

Senator DIXON. I would like to put some questions in the record, Mr. Chairman.

Chairman NUNN. Without objection. Senator Smith.

Senator SMITH. Mr. Secretary and General Powell, I would like to reiterate what many of my colleagues have already said and commend you for the outstanding leadership you have provided our Nation during a very, very difficult time. We appreciate it, and I know the American people do also.

General Powell, you stated that, in last year's budget, the Nation made a choice to reduce defense spending. I think it is a risky choice. I am very concerned that by mandating such rapid and deep spending reductions, we risk compromising our technological advantage in tactical and strategic weapons programs.

Mr. Secretary, as I read your statement about changes in the Soviet Union, future regional threats, relations with our allies, and changes in the nature of warfare, it does not seem to me that the budget before us responds to those challenges the way I would hope.

Obviously, many of these decisions were made prior to Desert Shield; prior to us knowing what Saddam Hussein was going to do on August 2. In your opinion, given the fact that we are putting tremendous wear and tear on equipment, and substantially shortening the life span of some of these aircraft and weapons systems, are we moving too fast with the reductions? Surely, you cannot say specifically how much of this equipment we are going to be needing 5 years from now, 6 years from now, because we do not know the extent of wear and tear, and what the losses are going to ultimately be in Desert Storm.

Secretary CHENEY. Senator, I am comfortable with the budget we have submitted in the sense that for the next 2 years, and that is where the real detail is in the budget, the 1992-1993 fiscal years, the package we presented will adequately safeguard the interests of the Nation with two qualifiers.

One is, we are funding on the side in a supplemental, and with contributions from our allies, the bulk of the cost for Desert Storm/Desert Shield. That does not include such things as the depreciation of some of our capital assets, as you correctly point out.

To the extent that we can clearly identify things as a net incremental cost, it will be funded through that supplemental approach. And that is vital. We could not do this if we had to also absorb the total cost of Desert Storm/Desert Shield.

The other thing I would emphasize, and I mentioned in my statement as well, is that it is possible we will be back here in a year or two saying that, given the circumstances in the world, we do not think we can go down to this level safely. As the Chairman pointed out, this is the absolute rock-bottom minimum. This is what we think the United States has to have in order to defend our security here at home and our interests around the world given a relatively stable international environment. But that might be a risky proposition. A year or two from now we might well come back and say, whoa, wait a minute. We do not think it is wise to go down that far that fast.

But I am confident that I can come before the committee this year, say that we can meet the budget marks we have been given by the Congress in the agreement approved last year for 1992 and 1993, and adequately safeguard the Nation's interests. We had to make some tough choices, but we think we can do it.

Senator Smith. If we look at the defense percentage in the early 1960s, for example, during the Kennedy presidency, we were spending some 47 percent of our budget on national defense. Today it is roughly 20 percent. And in the very near future, interest on the national debt will pass defense. I think this is something we need to be concerned about.

Last year, the House Manpower Subcommittee, on which I served, spent a lot of time talking about force reductions and end strength levels. Members received many letters from individuals concerned about early out retirements and what was going to happen. And now, just a few months later, these same people are out on the front line doing a hell of a job for us. If it turns out that we have got to say thank you very much, we will raise your unemployment from 13 to 26 weeks, good luck finding a job, that is going to be very sad for the morale of our troops. I would rather forego other programs than do that to our servicemen and women. They are the ones that make the equipment work. And I would just ask you to keep that in mind as the budget process moves forward.

I would also say to my Chairman, let us put the priority on the people that did the job for us rather than some piece of equipment. Let us remember the human factor here.

Thank you, Mr. Chairman. I ask unanimous consent to put a statement in the record as well.

Chairman Nunn. Without objection it will be.

[The prepared statement of Senator Smith follows:]

Prepared Statement by Senator Bob Smith

Secretary Cheney, Chairman Powell, allow me to echo the warm greetings extended to you by my colleagues. It is, indeed, a pleasure to welcome you before the Armed Services Committee for the first in a series of hearings on the fiscal years 1992-1993 defense budget.

Before we begin, let me commend you both for the outstanding service you are providing our Nation during this most difficult of times. Amidst the largest military mobilization since World War II, your stewardship of Operations Desert Shield and Desert Storm has been simply exceptional.

Today, as we initiate our annual authorization deliberations, American forces are engaged in a monumental military operation. The campaign to reverse Iraq's brutal and unprovoked annexation of Kuwait represents the most complex, meticulously orchestrated and executed evolution in military history. As you know, allied troop presence in the region includes more than 500,000 U.S. personnel and some 205,000 coalition troops from 27 nations. The successful integration of these troops and equipment into a unified, functional command structure has been a key factor in operational successes to date.

Desert Shield and Desert Storm have provided a unique opportunity to evaluate our military preparedness, and the performance of many previously untested combat systems. Indeed, the world has watched transfixed as Iraqi SCUD missiles hurl toward Israel and Saudi Arabia, only to be successfully engaged by U.S. Patriot missile batteries. The Patriot PAC-2 missile's maiden combat performance has been outstanding, and vividly demonstrates that ATBM technology offers a highly effective, desirable defense for military and civilian assets. I support the administration's request for increased funding on ground based air defense systems, and I look forward to working with you to further enhance and direct these emerging technologies.

The success of the Patriot system forcefully legitimizes the case for strategic missile defenses, as well. In his State of the Union Address, President Bush directed that the SDI program be refocused toward protection from limited ballistic missile strikes, whatever their source. This new focus would provide a more affordable, yet capable, layered missile defense. In my opinion, the GPALS strategy represents an appropriate, balanced approach to current budgetary imperatives, and projected changes in the strategic environment. Importantly, the limited defense concept reserves our option to expand ABM capabilities should future developments warrant. The recent successful ballistic missile interception by an Exoatmospheric Reentry-Vehicle Interceptor Subsystem (ERIS) clearly demonstrates the technological feasibility and desirability of strategic defenses.

While the Persian Gulf crisis has validated certain critical technologies, it has also highlighted shortfalls in our warfighting posture and preparedness. The expedited mobilization of forces to the Kuwaiti theater exposed many limitations in existing air and sealift forces. I would caution that as we refocus contingency planning away from sustained ground conflict in Europe toward rapid response to global crises, we must be certain to enhance air and sealift assets accordingly. Further, we must make greater and more effective use of maritime prepositioning. Without question, our ability to effectively deter aggression hinges upon the capability to project military power rapidly to all areas of strategic interest.

Additionally, I am concerned over the current status of naval aviation. Although attrition levels in Desert Storm have been miraculously low to date, the aging inventory of F-14 and A-6 aircraft, and Marine Corps CH-46 transport helicopters, must be replaced if we are to continue meeting global security requirements. The recent cancellation of the A-12 program, while certainly justified in my opinion, will inevitably create further developmental delays and exacerbate interim A-6 inventory shortfalls.

Secretary Cheney, Chairman Powell, I look forward to working closely with you on these and other pressing issues as we strive to refine an evolving defense strategy. Although events in the Persian Gulf have surpassed certain economic and force structure assumptions from last year, I believe the administration's budget represents a responsible starting point for our deliberations.

Thank you Mr. Chairman.

Chairman NUNN. Thank you, Senator Smith. I certainly agree with your emphasis on personnel. Senator Glenn.

Senator GLENN. The manpower changes of a reduction of 100,000 per year that we passed last year with a view toward reducing forces by about close to half a million by 1995, may need some addressing. The Chairman already mentioned that. As well, on the Manpower Subcommittee, I have repeatedly said as soon as you can get any information on what facts that we are going to have to deal with, get it to us as fast as possible so we can factor it into our planning and budgeting.

The personnel costs are something like 46 percent of our overall expenditures on the military budget. I know you are planning to address that as a supplemental later on, anything you can get to us, we would appreciate that.

[The information follows:]

PERSONNEL REDUCTIONS

The higher strength levels needed to support Operation Desert Storm were achieved by use of stop-loss policies and the postponement of some strength reduction plans. Although the resumption of reduction plans and the reversal of stop-loss will occur in conjunction with the redeployment, this will take time to complete, and some of the reductions planned for fiscal year 1991 will not occur on schedule. This will necessitate some adjustment to the end of fiscal year 1991 end-strength levels. In the supplemental appropriation requesting funding for Operation Desert Storm, an amendment to the waiver authority provided for in Section 1117 of the fiscal year 1991 National Defense Authorization Act was requested which will provide the needed flexibility.

We passed last night on the Senate floor, a resolution of the Senate to deal with the problem of military personnel in the Gulf with dependents. This is a very emotional issue, as we all know. The Senate resolution would call for streamlined DOD-wide regulations. Presently, each service has its own procedure for dealing with this and these procedures are not consistent with each other in some respects.

While this is just the sense of the Senate resolution, I would hope that you would take early action on that so we can make these regulations DOD-wide, and we can make an effective appeals procedure so the cases of significant hardships can be dealt with most expeditiously and effectively. Speed is of the essence because if you can make this work and make it work well, we will have positive results. On the other hand, if it cannot be made to work fairly and fast on an appeal procedure, we are probably going to have some future proposals that are going to prohibit certain categories of people from serving in the military. I think it is that important of an issue. I hope you can address that rapidly and effectively DOD-wide.

Secretary CHENEY. We will, Senator.

Senator GLENN. Thank you. Senator Levin addressed some of the program terminations from your opening statement where you addressed two goals: people as the most important facet in the whole budget and power projection and mobility. Along the lines of projection and mobility, I wanted to bring up the V-22.

You might have guessed that I would bring up the V-22 at some point this morning. Last year, the Congress felt strongly enough about it that we provided $165 million for production equivalent aircraft which would allow for complete operational testing. Let me say that as far as fly before buy, as of yesterday, they have flown 323 flights, 380 hours. They have conducted two ship board initial operations. When compared to the helicopters, the V-22 flies twice as far, twice as fast, with a third more payload.

If there is a case that makes a point for the V-22, it certainly is over in the Gulf. It gives you a mobility that is unparalleled. Presently, the helicopters are wearing out, and with desert combat we are wearing them out more rapidly right now. They do have to be replaced. We have a replacement in the V-22. We even have a report that the Japanese are developing a similar aircraft. We will buy Japanese, if we do not develop them ourselves.

I am curious if you have any reconsideration or new thoughts about that because we are talking about developing forces for the future that emphasize mobility, flexibility. If there is anything that emphasizes it, it is the V-22 capability—twice as far, twice as fast for every function that helicopters perform—minesweeping, troop transport, attack versions, special operations, the whole works.

Are you having new considerations of that as a result of our combat experience in Desert Storm?

Secretary CHENEY. Senator, I have great respect and admiration for all my friends who are strong advocates of the V-22. As I indicated when we first recommended terminating the program, it was not a consideration so much of whether or not the V-22 was a capable system as it was driven by budget considerations.

We are now at a much lower level. When I first canceled the V-22, we were on that upward path in terms of what we were recommending to the Congress of better than 1 percent per year real growth in the defense budget. We are now to the point where the defense budget is declining about 3 percent per year in real terms, given the agreement that was reached last year on the overall budget levels.

So my problem is, where I used to have 8 pounds of program in a 5-pound bag, now I have 8 pounds of program in a 4-pound bag, and I am not certain how I squeeze it in.

Senator GLENN. Mr. Secretary, you still have to replace the helicopters.

Secretary CHENEY. We have funds in our budget to replace the helicopters.

Senator GLENN. Why not replace them with a new capability which is just a little bit more expensive and gives you a new combat capability?

Secretary CHENEY. Senator, obviously we will abide by whatever the Congress in its wisdom directs us to do, but our recommendation is that, given the state that the program was in—about ready to take off for full-scale development and procurement—I had to find some way to save money to meet the bogeys I have been given, I had to kill something and the V-22 was what cropped up on the list of priorities. We have since added a number of other programs to the list.

Senator GLENN. Let me follow up on your statement that you will be glad to do what Congress directs you to do, because last year we directed $165 million in procurement, and not only have you not put it in, you have proposed this year to transfer it to other functions.

Secretary CHENEY. It is reprogramming, I believe, a rescission. It is proposed for rescission. That is the judgment of the Department, Senator, in terms of what our priorities ought to be. But obviously we will spend the money that Congress instructs us to spend on various and sundry items.

Senator GLENN. Well, I would hope you would take a new look at that because I think with the new capability we get, as we come out of this war and design our forces for future conflicts, it seems to me that we absolutely have to have the V-22. We have the capability. Somebody is going to produce it. I think it might as well be the United States.

I am told my time is up.

I ask unanimous consent that my prepared statement also be put in the record.

Chairman NUNN. Without objection.

[The prepared statement of Senator Glenn follows:]

PREPARED STATEMENT BY SENATOR JOHN GLENN

Thank you Mr. Chairman. Secretary Cheney, General Powell, I would like to add my personal congratulations and appreciation to both of you for your leadership and dedication during these past 12 hectic months. Since you testified before this committee last February on the fiscal year 1991 budget, the two of you have faced some difficult challenges and many tough decisions.

It was a year of challenges that ranged from developing a new defense strategy and military force structure for a post Cold War world, to organizing and deploying the largest military force since the Vietnam war. These challenges and decisions were made more difficult by a budget summit process that included significantly reduced defense budgets for the foreseeable future.

As you know, I have not always agreed with the substance or timing of certain DOD policy decisions, or several of your decisions on specific weapon systems; however, I believe that you have served the President and the American people extremely well; and equally important, the men and women in our Armed Forces.

I also believe that Congress, and specifically this committee, is, and will continue to be, a full partner with the administration in helping to meet what I believe is a government's first responsibility—providing for a strong national defense.

This posture hearing today is the first of many that this committee will conduct this year to review the administration's plan for maintaining a strong national defense. I hope that this fiscal year 1992 budget request is based on a strategy to meet our national security objectives—not a budget in search of a strategy. To this end, I have several questions that I would like to ask.

Chairman NUNN. Thank you, Senator Glenn. Senator McCain.

Senator McCAIN. Thank you, Mr. Chairman, and welcome to our witnesses. I will not waste the few minutes that I have in joining in the effusive praise that has been heaped upon you, except to comment what a difference a year makes. Also, it is a rare treat for this committee to have two future Presidents of the United States as witnesses today. [Laughter.]

If, of course, we believe the media.

General, the latest controversy surrounds the "ground operation." While you were relaxing here, Saddam Hussein stated a degree of intransigence which I think makes that activity more and more inevitable.

As you know, I have always believed that air power would be the primary instrument used in this conflict to achieve the goals that we seek. However, recognizing there may be a role for a ground operation at some point, there is a misconception that because we are going into a "ground operation" that we are going to see a repeat of the Battle of Tobruk or El Alamein. In reality, however, the ground forces will be used to basically root out the enemy and then air power will be projected to take care of the resistance.

Is that correct, and could you, within the bounds of classified information, provide us with what kind of tactical scenario could be used? Frankly, there are words like 30,000 to 40,000 casualties being bandied about from certain think tank quarterbacks, I think it might be helpful to this committee and the American people to give us, within the bounds of classification and security, what kind of tactics we would employ in a ground campaign.

General POWELL. Within those bounds, Senator, let me begin by saying that air power is the decisive arm so far, and I expect it will be the decisive arm into the end of the campaign, even if ground forces and amphibious forces are added to the equation.

Senator McCAIN. I recognize how difficult that is for an Army officer to make that statement.

General POWELL. Not at all. You know, 100 years ago we would mass firepower by putting 100 infantrymen together to shoot 100 bullets in one direction and we put 100 infantrymen at risk. Any time I can use one airplane pilot and one airplane who is really unencumbered in doing his job by enemy pilot or enemy air defense to put that amount of ordnance on target, I am all for it.

I think I can say without fear of too many people—except perhaps Dr. Luttwak and a few others—contradicting me that General Schwarzkopf and I are perhaps the foremost proponents of the use of air power in the Armed Forces of the United States today, second only perhaps to my good friend General McPeak. So I am a great believer in air power, and it will be a decisive arm throughout this entire campaign.

But we have other elements of combat power that it may be necessary to use in the final analysis to resolve this thing, and that is what we are constantly examining.

I have looked at some of the scenarios that have come from these various institutions around this town called think tanks——

Senator McCain. An oxymoron.

General Powell. Yes, sir, and all the part-time real estate experts who are now defense experts——[Laughter.]

And some of the scenarios that they have concocted to generate these very high casualty rates are not scenarios that would interest either me or General Schwarzkopf and have not interested either me or General Schwarzkopf.

At the same time, however, I do not want to mislead the members of this committee or the American public. Ground combat is tough business. Ground combat is nasty business. It is not nice and sanitized and clean as a video game such as nice gun camera footage. When you send marines and soldiers across the line, it is tough business; it is never easy business.

We will select our tactics in a way that will minimize casualties, just as we have done with the air campaign. We will do it in the smartest way possible, but it is important for this committee and for the American people to understand that there will be casualties. That is one of the regrettable outcomes of combat and of war. We will try to design our operations in a way to minimize that, but it will still be a war.

Senator McCain. With air power still being the primary instrument.

General Powell. The air campaign began on January 17 and it will not end until the last day of the conflict. If anything, I expect air power to be even more decisive in the days and weeks ahead.

Senator McCain. Senator Glenn and I co-chair a bipartisan task force putting together legislation for a benefits package, to correct any inequities that might exist as far as the brave servicemen and women are concerned. I would urge your active involvement in commenting on those so that we do not do something which frankly would not be in the best use of our defense dollars. I hope that we will have some intense communications in the next few days or weeks ahead, although I know that you are very busy.

General Powell, can you comment in general on the performance of the Apache helicopter?

General Powell. The Apache helicopter has performed well. Its operational readiness rate has remained very high. The biggest endorsement for the Apache helicopter is that the crews who fly them are very confident in the ability of that piece of equipment to do its job.

It has not been as engaged as other weapons systems have in the overall campaign, but I fully expect it to acquit itself extremely well in combat. And the crews are confident in their equipment.

Senator McCain. And it has done well so far?

General Powell. Yes, sir.

Senator McCain. My time has expired. Thank you, Mr. Chairman.

I would like my prepared statement be made part of the record.

Chairman NUNN. Thank you, Senator McCain. It is so ordered.

[The prepared statement of Senator McCain follows:]

PREPARED STATEMENT BY SENATOR JOHN MCCAIN

Mr. Secretary, let me again echo the much deserved praise that you and General Powell have already received for your outstanding achievements in the Persian Gulf. The conduct of the war to liberate Kuwait merits praise for every man and woman in the armed services, but it is equally obvious that its success could not have occurred without your leadership.

It is also obvious, however, that we could not have been so successful without strong, combat ready forces, and without the power projection capability that has allowed us to check Saddam Hussein in spite of the fact that we must fight half-way around the world. It is obvious that we could not have succeeded without the military build up that was undertaken by the Reagan administration, and it is clear that we will only be able to fight aggression in the future if we preserve most of this power projection capability over the years to come.

This brings me to the fiscal year 1992 defense budget request and your fiscal years 1992-1997 force plan. I believe that your fiscal year 1992 budget submission has many strengths, and I sympathize deeply with the burden you have faced in having to plan major cuts in our military capabilities. None of these choices can have been easy, and I know you share my concern with the risks that some have posed for our security and that of our allies.

There are, however, several aspects of your fiscal year 1992 budget submission, and fiscal years 1992-1997 that I find troubling. I would like to summarize those concerns and then ask you to comment upon them.

First, I believe that your force plans move too slowly in focusing our future force posture on power projection. You project cuts in the Navy and Marine Corps, and in other aspects of power projection capability that history strongly indicates we will need in the future.

Further, I do not see the procurements necessary to provide the airlift and sealift we need, although this need is one of the most important early lessons of the war to liberate Kuwait. I do not see the level of procurement and modernization necessary to give our power projection forces the technical edge over potential opponents that they have today.

Second, I believe that we are moving too slow in reducing our commitments to Europe. I think that we are going to have to leave Europe more quickly and more completely, and place even less emphasis on reinforcements for Europe to meet power projection commitments in other parts of the world. I believe that Europe must assume far more responsibility for its own defense, and do so far more quickly.

Third, I believe that our strategic nuclear program lacks a clear strategic focus and net assessment rationale, and devotes far too many resources into the wrong weapon system: the B-2. I blame Congress for much of the chaos in our strategic programs, but I also think that we are applying stealth to precisely the wrong area: an extremely high cost strategic system that will probably never be used, while we are stripping funds away from the Air Force and Navy that should go to tactical attack aircraft. In the end, we run the risk of having another unused high tech lemon like the B-1B.

Further, while you already plan significant cuts in the Minuteman force, in the number of bombers assigned to strategic missions, and in our SSBN force, I believe that further examination is needed of programs like the Trident and SSN-688 submarine to see if still further economies are not possible so we can shift additional resources to power projection.

Also, we have heard much praise for the merits of the Patriot and SDI, but we are also aware of arguments between the Army and SDIO over how to develop effective land based systems to deal with tactical missiles in a ground based mode. I believe we need a much clearer set of specific plans to deploy advanced air and missile defense to protect our forces and our allies during our lifetimes, and a lot less emphasis on high technology that may not be around when we need it.

Fourth, I believe we face a very real risk of a hollow force structure. We need a clearer plan for a Total Force Concept or to ensure that we have a viable mix of Active and Reserve forces. I do not see how you can fund the levels of munitions and stocks we need, or the training activity.

Finally, we need a clearer strategic framework for dealing with issues like the future role of our allies, with burdensharing, and with the need for foreign basing and deployment, and with arms control.

I believe that we must examine more than the budget if we are to establish a New World Order. We must persuade our allies to assume their responsibilities, and we must place effective constraints on arms sales and technology transfers if we are to prevent the emergence of tomorrow's Saddam Husseins.

In short, Mr. Secretary, I do not disagree with the basic thrust of your plans and budget, but I do find some problems and omissions, and I sincerely hope we can begin with this hearing to address these issues.

Further, I hope that this year we can break from our past focus on the coming budget year and discuss the overall pattern of shifts in funding, manpower, and procurement over the entire fiscal years 1992-1997 planning period.

You have advised us that we are not simply funding a budget, but a new strategy based on force reductions of roughly 25 percent over the next 5 years. What we need is an examination of how the funding of given roles and missions will change over the entire planning period, whether we have the right long term priorities, and how we will make the trade-offs that will allow us to implement the strategy we really need.

Chairman NUNN. I believe Senator Wirth is next.

Senator WIRTH. Thank you very much, Mr. Chairman, and, gentlemen, thank you very much for being here and for your truly magnificent performance.

I wanted to touch very briefly in the time available to me on the question of conventional arms transfer, which, Mr. Secretary, you touched briefly on in your testimony on pages 8 and 14.

The Jerusalem Press recently carried an article analyzing where Saddam Hussein had purchased his weaponry, and they had a very extensive analysis which I would like to have included in the record if I might, Mr. Chairman.

Chairman NUNN. Without objection.

[The information follows:]

Who sold what to Saddam

TEL AVIV, (JTA) – The Israel Foreign Ministry has published an analysis of major arms sales to Iraq during the past decade, from many countries of both the Eastern and Western blocs.

The information was based on data supplied by the Stockholm International Peace Research Institute.

The listings are as follows:

BRAZIL (1979-1989)

78 Astros-II SS-30 multiple rocket launchers
20 Astros-II SS-60 multiple rocket launchers
900 EE-11 Urutu armored vehicles
300 EE-3 Jararaca scout cars
1026 EE-9 Cascavel armored cars
13 Astros guidance fire control radars
100 Cobra-2,000 anti-tank missiles
960 SS-60 surface-to-surface missiles

CANADA (1987-1988)

6 Helicopters BO-105LS

CHILE (1990)

MODEL 206 helicopters INA (1981-1988)
4 B-6 bombers (planes)
700 T-59 main battle tanks
600 T-69 main battle tanks
650 Type 531 armored personnel carriers
720 Type 59/1 130mm towed guns
72 Hai-Ying-2 coastal defense missiles

CZECHOSLOVAKIA (1980-1985)

1,000 BMP-1 motorized infantry combat vehicles
300 OT-64 armored personnel carriers
400 T-55 main battle tanks

EAST GERMANY (1980-1981)

80 T-55 main battle tanks

EGYPT (1981-1989)

80 EMB-312 Tucano trainers (planes)
40 F-6 fighters (planes)
80 F-7 fighters (planes)
18 SA-342L Gazelle helicopters
300 BM-21 122mm multiple rocket launchers
96 M-46 130mm towed guns
300 Sakr-30 122mm multiple rocket launchers
250 T-55 main battle tanks
100 AT-3 Sagger anti-tank missiles
SAKR EYE portable surface to air missiles (SAM)
50 Khalid main battle tanks
100 M-109 155mm self-propelled howitzers
30 M-114 155mm towed howitzers

KUWAIT (1984)

80 Chieftain-5 main battle tanks

LIBYA (1983-1983)

400 EE-9 Cascavel armored cars

POLAND (1980-1986)

400 T-55 main battle tanks
200 SA-6 GAINFUL landmobile surface to air missiles (SAM)

ROMANIA (1981-1984)

150 T-55 main battle tanks

SAUDI ARABIA (1986)

12 FH-70 155mm towed howitzers

SOUTH AFRICA (1984-1988)

200 G-5 155mm towed howitzers

FRANCE (1977-1989)

6 AS-332 helicopters
6 AS-365 N helicopters
113 Mirage F-1C air fighters/interceptors (planes)
8 Mirage 5D jet-trainers
20 SA-330L Puma helicopters
38 SA-342K Gazelle helicopters
5 Super Etendard fighters (planes)
3 Super Frelon helicopters
110 AM-10RC scout cars
105 AM-30 Roland anti-aircraft vehicles (missiles)
85 AM-30-155 GCT self-propelled guns
200 ERC-90 Sagaie armored cars
100 M-3 armored personnel carriers
100 VCR-6 armored personnel carriers
6 TRS-2230/15 three dimensional radars
10 Tiger point defence radars
284 AM-39 Exocet anti-ship missiles
700 ARMAT anti-radiation missiles
AS-15 TT anti-ship missiles
180 AS-30L air-to-surface missiles
1960 HOT anti-tank missiles
4800 Milan anti-tank missiles
267 R-530 air-to-air missiles
534 R-550 Magic air-to-air missiles
1050 Roland-2 landmobile surface-to-air missiles (SAM)
200 SS-11 anti-tank rockets

GREAT BRITAIN (1982-1983)

36 Saboteur armored personnel carriers

HUNGARY (1980-1981)

200 Fug-70 scout cars

ITALY (1981-1989)

2 A-109 helicopters
5 AB-212 ASW helicopters
18 AB-412 Griffon helicopters
30 Model 300C helicopters
64 Model 500D helicopters
6 S-61 A-4 helicopters
10 Aspide/Albatros missile launchers
10 Otomat-2L missile launchers
224 Aspide ship-to-air missiles
60 Otomat-2 anti-naval rockets
4 Lupo frigates
6 Assad corvettes
1 Stromboli supporting ship

JORDAN (1982-1986)

30 F-4 fighters (planes)
[illegible] 155mm towed howitzers

SOVIET UNION (1973-1990)

19 IL-76 Candid transport planes
10 Mi-24 Hind-C helicopters
30 Mi-8 Hip helicopters
61 MiG-21Bis fighters
60 MiG-23BN fighters planes
55 MiG-25 air fighters
64 MiG-29 fighters
110 Su 20 Fitter C fighters ground-attack plane
40 Su-25 Frogfoot fighters ground-attack planes
30 Su-7 Fitter fighters (planes)
50 2S1 122mm self-propelled howitzers
80 2S3 152mm self-propelled guns
560 BM-21 122 multiple rocket launchers
30 BRDM-2 Gaskin anti aircraft vehicles (missiles
576 D-30 122mm towed howitzers
600 MT-LB armored personnel carriers
200 PT-76 light tanks
50 Saddam 122mm towed howitzers
1,000 T-62 main battle tanks
700 T-72 main battle tanks
62 SA-6 mobile surface-to-air missile (SAM) systems
36 SA-8 mobile surface-to-air missile (SAM) systems
12 SS-21 Launcher mobile surface-to-surface missiles
1300 AA-2 Atoll air-to-air missiles
60 AA-6 Acrid air-to-air missiles
300 AA-7 Apex air-to-air missiles
500 AA-8 Aphid air-to-air missiles
40 AS-14 Kedge air-to-surface missiles
24 AS-4 Kitchen air-to-surface missiles
36 AS-6 Kingfish air-launched cruise missiles
1500 AT-3 Sagger anti-tank missiles
520 SA-6 Gainful landmobile surface-to-air missiles (SAM)
432 SA-8 Gecko landmobile surface-to-air missiles (SAM)
240 SA-9 Gaskin landmobile surface-to-air missiles (SAM)
36 SS-21 Scarab surface-to-surface missiles
350 Scud-B surface-to-surface missiles
8 Osa warships
6 P-6 torpedo boats
3 T-43 MSC minesweepers
3 Polnocny amphibian boats

SPAIN (1981-1988)

80 BO 105 CB helicopters
300 BMR-600 infantry combat vehicles

SWITZERLAND (1979-1990)

48 AS-202 Bravo trainers (planes)
52 PC-7 trainers (planes)
20 PC-9 trainers (planes)
50 Roland armored personnel carriers

US (1985-1988)

81 Model 214ST helicopters

WEST GERMANY (1978-1989)

22 BK-117 helicopters
[illegible] BO-105 helicopters

Senator WIRTH. Weaponry from Brazil, Canada, Chile, Czechoslovakia, East Germany, Egypt, Kuwait, Libya, Poland, Romania, Saudi Arabia, South Africa, France, Great Britain, Hungary, Jordan, the U.S.S.R., Spain, Switzerland, West Germany, and the United States.

I think we are all troubled by this international arms bazaar. There was an effort made in the late 1970s that you may remember, the so-called conventional arms transfer talks that were in Mexico City. The Europeans are beginning to get together and look at the possibility of sustaining their arms development programs across countries if they cannot sell or if they do not want to sell as much overseas, to cooperate more extensively internally to maintain at least some defense production capability.

Could you talk a little bit more, Mr. Secretary, or define a little bit more for us what kind of a priority this is, what kind of attention you all will be putting on the conventional arms transfer issue after this war is over?

Secretary CHENEY. Senator, I do not know that I can give you any great detail at this point other than, as I did in my testimony, to emphasize that this is one of the things we are concerned about and that we think needs to be addressed, especially when we are talking about the Gulf region.

I think we have to remember that when this current conflict is over with, Iraq will still have the second-largest proven oil reserves of any nation in the world, exceeded only by those of Saudi Arabia, and they are going to be very busy for some period of time repairing what has been done during the course of this campaign.

But clearly the wealth exists there, if the will does elsewhere in the world, to go out and rearm to a significant degree over a period of years. We would hope that would not be the case. We would also, I think, need to be concerned about the extent to which not just conventional but unconventional weapons and capabilities increasingly find their way into the hands of potential adversaries around the world.

I think it is in our self interest, together with other nations who have those capabilities, to find ways to limit their proliferation.

Senator WIRTH. Well, in reading your testimony I was looking for this, and in particular I found those two references and would hope that maybe it might receive some greater emphasis in terms of planning. I think this is enormously important and the American public is obviously going to be very concerned, and should be—we all are—about the transfer of these technologies.

I wanted to, if I might, also touch very briefly on your priorities for nuclear modernization. Could you describe to us which nuclear weapons systems we need to be building? Is there a need to do this? Behind this is my concern, as you might imagine, for the whole nuclear weapons complex and particularly the restart of the Rocky Flats nuclear weapons complex in Colorado, which has just run into all kinds of problems.

DOE is now beginning to push for the restart because of the requirements presumably laid on them by the Defense Department, the major requirement being the D-5. The question comes down to is there a need at this point to develop a number of new nuclear warheads, or is the arsenal adequate for a period of time?

Secretary CHENEY. Senator, it is not as much a question of the size of the total arsenal as it is the quality of the systems themselves. Earlier this year, for example, I ordered the SRAM missile that we fly on the bombers, the short-range attack missile, off alert. For years we had maintained it on alert status on B-52 bombers parked on runways loaded with the SRAM missile.

We took it off alert because the international situation had improved enough that we thought we could put it in the bunkers and we would have time to rearm if we needed. And, also because there was some concern that it did not meet the highest possible standards from a safety standpoint—that an aircraft involved in a fire could conceivably lead to an explosion, not a nuclear explosion but the dispersal of radioactive material.

In many cases, what we are talking about when we ask for new warhead production is producing new systems that are safer, designed better than the ones that they are intended to replace. The situation with the D-5 is that we are embarked upon the program of the Trident submarines. We are going to stop at 18 for the total buy. We would like to backfit the Tridents that do not yet have the D-5 on them eventually, although we postponed that in this budget for financial reasons. Obviously, we have a need, I think, to go forward with modernization of those systems.

So I do not think we can afford to shut down the Nation's nuclear weapons complex. I know that Secretary Watkins has been working very hard to deal with the environmental problems that clearly exist at Rocky Flats and elsewhere. We are not unsympathetic to his problems, but it is also true that we think if we have a smaller arsenal available to us in the future, it needs to be just as safe and as capable as we can make it. So for that reason there is a need to resume production at some point on these.

Senator WIRTH. I understand what you are saying. The thrust of my question is not to shut down the complex, but if the needs have declined significantly and safety upgrades do not require new pits, as you know, and the D-5 retrofit has been postponed for a long period of time, then the urgency to restart the very large plutonium capacity that is at Rocky Flats. If we need a smaller capacity, that can be done at other, safer facilities.

I am not making a "not in my backyard" argument. It does sound like that. But the question is one of safety, which we are all concerned about, and the impacts of these plants. We will be getting back to you on that issue because obviously what you see as your priorities drive what is going to happen in the middle of the Denver metropolitan area, which we are all awfully concerned about.

Just a final footnote. I want to get back to you also on chemical demilitarization, on the baseline technology versus cryofracture, an issue that probably has not come up to you—as well as technologies for rocket motor destruction, which this committee had put into the budget 2 years ago and which you have now decided to increase significantly. I was delighted to see that.

Thank you very much, Mr. Chairman.

Chairman NUNN. Thank you, Senator Wirth.

I told the Secretary we would try to get him out of here as close to noon as we possibly can because he has another engagement. We have gone a little beyond that. I know we still have Senator Bingaman and Senator Shelby who need to ask questions. Could I ask Senator Bingaman to lead off and then perhaps yield after you have finished with your questions to Secretary Cheney? We will let both of you ask questions to him in an effort to expedite it, and then come back if you have time left for General Powell.

Senator BINGAMAN. Thank you, Mr. Chairman.

I join my colleagues in complimenting you on all you have been able to do. Let me ask a question about the cost. The budget you have given us does not have in it any of the cost of Desert Shield or Desert Storm, as I understand from what you testified to today.

Secretary CHENEY. That is correct. That will be in a supplemental that will be submitted next week.

Senator BINGAMAN. Now, the supplemental will only contain, as I understand it, the so-called operational costs of Desert Shield and Desert Storm as best they are determined. It will not contain the cost of replacement of equipment and aircraft and other items. For example, I think you had indicated we had lost 25 planes. We have shot some 300 Tomahawk missiles, each one for $1.3 million. We have shot a couple hundred Patriots.

There are a lot of items that we are using up. Am I to understand that is not part of what we will see next week? That will be in a second supplemental?

Secretary CHENEY. Senator, I will give you my best judgment right now, but I would like to be able to reserve a final answer until we have the package for you next week.

Basically, what we have tried to do is define those costs that are specifically related to Operation Desert Storm, those things where we are spending money that we would not have spent if it had not been for this operation. We are trying to cover a big portion of that with contributions from others.

Things such as salaries for Active duty personnel we would not cover in this. That is an expense that would go on anyway. Salaries for reservists called back to Active duty would be covered in this. I would expect that we will want to replenish spares and munitions and any war reserve stocks we have used that ought to be covered in the supplemental—the costs directly attributable to Operation Desert Storm.

On the other hand, flying hours added to aircraft is very difficult to pick up in a supplemental, and those I think are depreciation of capital assets that we would basically absorb. But it is those kinds of choices that are made. The supplemental will be announced, I believe, tomorrow at OMB by Budget Director Dick Darman and will be presented to the Appropriations Committee next Tuesday.

Senator BINGAMAN. Mr. Chairman, did you want me to finish my questions here?

Chairman NUNN. If you are through with Secretary Cheney, maybe we could go to Senator Shelby and then come back to you to finish.

Senator SHELBY. I will try to cut my questions down. Secretary Cheney, if we do come up with an agreement or unconditional withdrawal of the forces of Saddam Hussein in the next few days—I do not know that we will—is it important that he withdraw as fast as he can, leaving most of his equipment there for future stability reasons?

Secretary CHENEY. I think as a general proposition, Senator, to the extent that we deny Saddam Hussein the equipment that he used in his invasion of Kuwait—that he has used to destabilize the Middle East—the better off we will be in that part of the world. We have done that in part through the air phase of the campaign.

I would guess that some of the equipment that he has in Kuwait he is not going to be able to take home. They lack the vehicles to move it, they may be short of fuel—all kinds of reasons why they may find it difficult to get a lot of it home unless they had a very long period of time.

We are interested in having a short period of time for withdrawal. It took him 5 hours to take Kuwait.

Senator SHELBY. Could you get him out in 5 hours?

Secretary CHENEY. Well, we are not suggesting he can get out in 5 hours. I do not think anybody expects that. But immediate, unconditional withdrawal means immediate, unconditional withdrawal, and that is what we will have to have in order to have a satisfactory conclusion.

Senator SHELBY. Under what timetable do you think he could withdraw immediately?

Secretary CHENEY. I would think it would be a matter of days, certainly, rather than a matter of weeks.

Senator SHELBY. General Powell, do you have a comment on that?

General POWELL. I would concur with the Secretary.

Senator SHELBY. Thank you, Mr. Chairman.

Mr. Chairman, I have an opening statement I would ask be made part of the record.

Chairman NUNN. Without objection.

[The prepared statement by Senator Shelby follows:]

PREPARED STATEMENT BY SENATOR RICHARD C. SHELBY

Thank you Mr. Chairman. I would like to join my colleagues in expressing my gratitude to you for all that you are doing for the American people and for appearing before the committee today.

We meet here today to receive testimony from the Secretary of Defense and the Chairman of the Joint Chiefs of Staff on the Department of Defense budget for fiscal years 1992 and 1993. We will discuss issues relating to the overall size of the budget request as well as particular programs within the 2-year budget. We will speak to force structure changes and personnel issues. We will talk about the readiness of the force and the balance between spending on strategic versus conventional forces. There will be the usual give and take that occurs at any hearing. All these important issues are, however, overshadowed by the conflict now occurring on the Arabian Peninsula.

Mr. Chairman, we are currently leading a coalition of allied forces in a war to drive the imperialistic regime of Saddam Hussein out of Kuwait. Our forces have been effectively destroying Iraqi defenses over the last 5 weeks. Now, we are perched on the precipice of an all-out combined sea, air and land campaign to fully implement the United Nation's goals.

At the same time, there has been a flurry of diplomatic activity. Envoys have been traveling back and forth between Iraq and the Soviet Union. Peace plans are being discussed and rejected. We must consider if Saddam Hussein, fearing the loss of his war making machine, is now willing to withdraw from Kuwait. But will this be an unconditional withdrawal? And more importantly, is an Iraqi withdrawal from Kuwait now enough?

Mr. Chairman, I have been steadfast in my support of this effort from the beginning of Desert Shield and will continue my support through the conclusion of Desert Storm. However, while our generals prosecute the war we must be looking forward to the structure of the Middle East after this crisis has ended. Should Saddam Hussein and his war machine be allowed to stay in power? Where will the next threat come from? Will we have to maintain U.S. or allied forces in this theater of operations long after the shooting has stopped? How much is this effort costing the American taxpayers? What burden will our allies carry? These are the questions that need to be asked while we consider the budget request.

Moreover, the committee in the days, weeks and months ahead will be concerned with the fiscal years 1992 and 1993 budget requests, at least one Supplemental Appropriations request to pay for the war, a list of programs for rescission from the Department of Defense, and various personnel issues related to the Desert Storm operation. We need to elicit your views on these issues as well.

Among the many programmatic issues that are before us today, I am especially concerned over the direction of the Strategic Defense Initiative. We all can applaud the near perfect record that the Patriot Missile System has set against Iraqi Tactical Ballistic Missiles. The success of this system proves that we can hit a bullet with another bullet. It also sets the groundwork for funding for upgrades to this system and the development of other ATBM systems such as ERINT, THAAD and Arrow. In addition, the success of the Patriot proves that the additional funding for Theater Missile Defenses that Senator Warner, Senator Bingaman and I had worked so hard for in last year's defense bill was money well spent. This year's request for tactical ballistics missile defenses is welcome and I believe reflective of SDI's new-found support for these programs.

My difficulties lie in the SDIO's continued emphasis on space-based weapons within the proposed Global Protection Against Limited Strikes (GPALS) architecture. I believe that the focus of the program should be on the development of ground-bases systems that are ABM Treaty compliant or compliant with mutually agreed modifications to the treaty. Cuts in the fiscal year 1991 request resulted in subsequent cuts in ground-based programs and advanced technology research. At the same time, funding for space-based systems such as Brilliant Pebbles was increased by SDIO. I fear that similar actions are likely to take place should funding be lowered once more. Moreover, I question the effectiveness of Brilliant Pebbles against the tactical ballistic missiles that we have seen utilized in the Middle East.

Mr. Chairman, there is consensus that we need to restructure our military to meet new threats and fiscal constraints. Taken in its entirety, I find the budget request before us today a well-balanced plan that is indeed forward looking and works toward these objectives.

Once again, I want to welcome Secretary Cheney and Chairman Powell and express my thanks for the exemplary fashion in which they have been performing their duties under most difficult circumstances. I await your testimony.

Chairman NUNN. Thank you, Senator Shelby. Senator Bingaman.

Senator BINGAMAN. I will stop with that, Mr. Chairman.

Chairman NUNN. All right. I believe that Senator Warner has some remarks and then after that we will excuse the Secretary. General Powell, we may have a few more questions for you, if you are willing to go ahead.

General POWELL. Yes, sir.

Senator WARNER. Thank you, Mr. Chairman. Secretary Cheney, Senator Nunn and I and Senator Inouye and Senator Stevens were privileged to have this trip that you specifically asked us to undertake after consultation with the President, and we were pleased to have Secretary Gribbin and his deputy, Mr. Dykstra, with us. I think it was very helpful to have your two principal deputies in the legislative work for the Senate accompany this delegation.

I was able to persuade them to go aboard the U.S.S. *Wisconsin* so that they could observe my first-hand lobby, which I initiate now with you, to reexamine the decision to keep those battleships in America's inventory of fighting ships. Do I detect a nod of your head, that you will reexamine that? Thank you, Mr. Secretary. We can move along. [Laughter.]

The subject of defense against ballistic missiles. Our delegation witnessed the Patriot not more than a few hours after it had effectively interceded in the 16th SCUD attack on that helpless nation of Israel, and we also had the opportunity to observe the people of that country, how they react, with calmness and conviction in the face of those provocative terrorist attacks by the SCUD. I think we all join in commending them. Indeed, it is their forbearance that will be one of the principal components, should diplomacy at some point in time be able to work out a solution in the Gulf.

But returning to the subject of ballistic missiles—and I am speaking only for myself—I am going to work on the restructuring of that program and foremost among my goals will be to drop the name SDI. I think it has outlived its usefulness. We should pursue now to focus more on the short-range systems and what we can do to develop defenses against those systems, not only for ourselves but for our allies.

In terms of the long-range systems, I do not suggest we should in any way drop our emphasis on restructuring the work on those systems, but, again speaking for myself, I think the time has come now in this legislative cycle to reexamine the vague language of the ABM Treaty, the inconclusive language of that treaty, which has provided an impediment against, I think, the full research and development efforts for components in space.

I just believe that now is the time to reexamine that. We are spending tremendous sums of money in that area, and before we go on with further expenditures we had better examine that.

Last, General Schwarzkopf and the concept of the CINCs. The Goldwater-Nichols Act—we should really rename it Goldwater-Nichols-Schwarzkopf because he has proven the act, the wisdom of that change. It was pushed through this side by our distinguished Chairman, and he has gone forward and shown the world to be an extraordinary leader, not only a military leader but he has won the hearts and the minds and the confidence of the people of this Nation.

And that is so important in an operation like this, particularly if we have to enter into a substantial ground phase. I think he, more than any other person, perhaps next to our President and maybe yourselves, will be able to hold together the will of this country to endure whatever the consequences may be of that action.

In my humble judgment, and having had the privilege of knowing senior officers for well over 40 years now, he is brilliant. He combines not only the quality of a tactician, but he also understands the political realities, he understands public relations, and he is going to do a splendid job.

But I draw that point to your attention because of the very important question asked by Senator Kennedy, who seized upon certain comments that he had made. And now you two gentlemen have put them in the context of the fuller statement. But in the event we move into a significant ground phase, then I would hope that there would be no basis on which anyone could say that we undertake that operation against the advice of General Schwarzkopf. I think you more or less stated that today, but I wanted to recast it in certain words.

The Nation has got to be convinced that he, in consultation with the two of you and the President—that it was the four of you who made that decision and there was unanimity in making it. Thank you.

Secretary CHENEY. Senator, let me just reaffirm what you have said in terms of your view of the value of General Schwarzkopf and the Goldwater-Nichols Act. I think it has worked very well. But I am blessed, as is the President, with two very capable military leaders, not only General Schwarzkopf in the field, but also General Powell who advises the President and me as the Chairman of the Joint Chiefs of Staff.

Goldwater-Nichols reformed the system in very significant ways, both at the Chiefs' level and for the CINCs. At the time when I voted for it, as a Member of Congress, I had no idea that some day I would have to live with it, but I must say it has been an excellent piece of legislation, and I think the system has performed admirably.

Senator WARNER. Senator Nunn was in the very forefront of leadership by getting that through here in the Senate.

Secretary CHENEY. With respect to the overall question of how the process worked to date, I think it would be fair to say, and this certainly is our intention for the future, that the President has set broad goals and objectives, given us overall strategic guidance, and then basically left it up to our senior military commanders to put together the campaign, to do the planning, and to execute it. I think that is one of the reasons it has worked so well.

Clearly, while he has to make the decision about the next phase of the campaign, he will rely very, very heavily on the advice of General Powell and General Schwarzkopf in that decision.

Senator WARNER. One of the reasons I think the American public has reposed such confidence in him as they have in the two of you is that there is no basis on saying that he has been muzzled in any way. He has been very outspoken and very clear. And the problems that you are experiencing with the press in the Gulf, and that is a whole separate subject, there is no question in the minds of the American public that when he appears he speaks of his own free mind, and does so.

The soldiers and sailors and airmen that I met—and I would like to conclude with this observation—while they expressed great appreciation for the training and the arms that they had, and the dependence on one another, the support that is coming from the United States, from their families and from all other quarters of this country is absolutely vital to those individuals, and they are most appreciative.

I remember visiting one base very late at night observing a queue of individuals, and it puzzled me. I did not know why, at about 11 at night, there would be a long line waiting to get into one little tent. This was in a base in the southern part of Bahrain where there are 8,000 individuals now living in tents, a tent city having been created in a matter of a few months, another extraordinary chapter of logistics which Senator Nunn observed.

That queue was waiting to get into the chaplain's office to get a letter addressed simply to "my soldier in the Gulf." They each wanted to get some of those letters and take back to their tents and read them before they retired for the night. And they are in short supply. I would hope more would be forthcoming.

Chairman NUNN. I might just add, Senator Warner, I think the American people know how important their support is. But just for the purpose of making sure they understand it, we reiterated everywhere we went letters from small children that had come from classrooms were on the wall. This kind of visible support by the American people, young people, older people, is just enormously important psychologically. And I think that it would probably have to be listed as the number one overall factor in terms of boosting the morale of our military men and women.

General POWELL. If I may, Senator Warner, let me also join in singing the praises of my dear friend and colleague, Norm Schwarzkopf, because he will ask me later why I did not, if I did not. [Laughter.]

The Nation is blessed to have commanders such as Norm Schwarzkopf. The troops under his stewardship are blessed to have him as their commander, as well as all the other commanders that are over there: General Horner, General Boomer, General Eilsac, General Waller, and General Pagonis, the great logistician of the U.S. Army. So the Nation is fortunate to have that quality of leadership at this particular time.

Senator WARNER. Put in an admiral also.

General POWELL. I am getting to the Admiral. And let me not forget Adm. Stan Arthur, who commands NAVCENT.

Senator WARNER. That was a team that was in place that was brought over and put down, and it worked. And you did not have to put it together. That is the beauty of the CINC operation.

General POWELL. One more point I would like to make. When the books of this whole operation are opened and it is examined by historians and analysts and others, they will see that Goldwater-Nichols worked well. They will see a perfect blending of military and political considerations to get decisions and to reach an end. And they will also see the vital role that not just the Chairman and General Schwarzkopf and the Secretary and the President played, but also my colleagues in the Joint Chiefs of Staff.

A lot of concern about what their role is is in terms of Goldwater-Nichols. They have played a full active role in this entire operation, understanding what jointness is all about, and I do not think the Nation has ever been served by a greater group of chiefs, who collaborate together for a common purpose. The log rolling that everybody worries about and thinks goes on, did not go on in this operation, Mr. Chairman, Senator Warner.

Chairman NUNN. Thank you, Mr. Secretary. Thank you, again, for being here.

General Powell, I think we can wrap up yours in just a few minutes, but I would like to give our colleagues a chance to come back. I will yield to Senator Glenn or Senator Bingaman, either one that has a question.

Senator GLENN. Thank you, Mr. Chairman. I do have at least one question. I very much favor the increase in the number of people over there, so that when we go we have every possible asset. You go, and you go hard, and you end the war as fast as possible.

But as that military capability goes up for the immediate concern, the sustainability goes down if you have to stay beyond, say, August or September, or whatever, if things do not go quite as well as we anticipate they will. In the military, obviously, you always have to have a contingency for a worst case scenario.

An obvious problem is the rotation of people over there. They start coming up on their year in August. The question is—we have about a million reservists and we have only called up about 200,000. Are you planning to help alleviate this? What might be a danger for the future if we do get bogged down a little bit, by calling people up? There is a time sensitivity when they would need some training if they were going to be combat-ready and fit into the Active force structure. Are you planning any additional Reserve call-up in the near future?

General POWELL. The direct answer is, no, Senator Glenn. As you know, the President did authorize some partial mobilization. We have not made full use of that authority, but the authority is there. The size force we have there now would be very difficult, as you know, to sustain for an extended period of time without the infusion of other Active units that are untouched so far in the crisis.

Senator GLENN. With the 250 or 275, we have talked about this before, we probably could have handled that. At the size we are up to now, what do you think?

General POWELL. It would be very difficult, without a significantly increased commitment of Reserve component strength.

Senator GLENN. We are just planning, then, that this is going to go well and that is it?

General POWELL. We look at all contingencies, Senator, but I am not prepared to say today that we have planned additional Reserve call-up.

Senator GLENN. One other question. I noticed in Secretary Cheney's statement when he came to the post-war Gulf and the points that he was making that would guide such an approach, I do not know whether this is inadvertent or not, it does not seem that in his whole statement or in your statement that there really is any emphasis of the U.N. or discussion of the new world order.

We are over there now largely because of—or at least a major part of it is because of U.N. support. The coalition was put together pursuant to that. Can you go into that a little bit? Is this inadvertent that we are reading the U.N. out of our future planning? Because I thought the U.N. was going to be one of the key elements of this new world order, and we are going to work more with that type coalition for future world trouble spots. Could you address that?

General POWELL. I would not read it out, Senator. I think it is just premature, at this point, to make judgments about what the new security arrangement might be. I have been very impressed over the last 4 or 5 years at the enhanced role the U.N. has played in this sort of activity, and I, particularly in my days as national security adviser, have become a great believer in the United Nations and the role it might play in such a situation. By not specifically mentioning it, is just that it is premature to mention, but you should not read that as a ruling out.

Senator GLENN. Well, okay, and I did not. I was just curious about the absence, because we have put such stock in the 12 U.N. resolutions. The U.N. has been very, very key to this particular situation.

General POWELL. Absolutely right.

Senator GLENN. And I would think it would be wise to include them at least for now so people do not think that this is a very casual relationship that we have established for the current conflict.

Chairman NUNN. Thank you, Senator Glenn. I have one final question, General Powell. The President announced in his State of Union speech that he had directed "the SDI program be refocused on providing protection from limited ballistic missile strikes, whether their source." I welcome that. I think that is the right focus, and Senator Warner has mentioned that already.

Have the Joint Chiefs defined what constitutes a limited attack at this stage?

General POWELL. We are still examining that. We, of course as you know, Senator, had a Phase I requirement on the books. And within that Phase I requirement—which was a more comprehensive regime to protect the United States—within that Phase I requirement, we recognize that it might be possible to get limited protection and protection against regional theater ballistic missile threats on the way to the Phase I requirement.

But we have not yet abandoned that original Phase I requirement, and at the moment, we do not see anything inconsistent in terms of laying out a requirements document between the Phase I requirement and what the refocused SDI program will look like. But it is something we have under review.

Chairman NUNN. But there will be priorities within that, though?

General POWELL. Yes.

Chairman NUNN. You are clearly putting this limit up front.

General POWELL. This becomes the President's priority and our priority. We have also asked the various CINCs to come in with their requirements for protection against regional ballistic missile threats, so we will be working a new requirements document associated with that.

I am still one of the old SDI folks around from the old days, and I still believe that there is some merit in trying to refocus the whole argument from an offensive based system of deterrence to a more defensively based system of deterrence. But we have discussed this many times over the years, Senator.

Chairman NUNN. That is clearly moved back a notch in terms of priority, though, now?

General POWELL. Yes, sir.

Chairman NUNN. Senator Warner, do you have any other questions?

Senator WARNER. No. Thank you very much. Thank you, General. We are very proud of you.

Chairman NUNN. Thank you, General Powell.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR CARL LEVIN

SDI

Senator LEVIN. Secretary Cheney, your testimony indicates that the Strategic Defense Initiative program will be reoriented to provide global protection against limited ballistic missile strikes. This refocused defensive concept, known as Global Protection Against Limited Strikes (GPALS), includes both ground-based and space-based interceptors, including Brilliant Pebbles.

In your opinion, will the testing of the space-based interceptor Brilliant Pebbles violate the narrow interpretation of the ABM Treaty? Will it violate the broad interpretation of the ABM Treaty?

If the U.S. proceeds with the GPALS system, and deploys both ground-based and space-based interceptors, will this deployment violate the narrow interpretation of the ABM Treaty? Will it violate the broad interpretation of the ABM Treaty?

Secretary CHENEY. The SDI program is being conducted in full compliance with U.S. legal obligations, including the ABM Treaty.

B-2 TECHNICAL PROBLEMS

Senator LEVIN. Secretary Cheney, the B-2 bomber has now completed a number of tests including preliminary flight tests and some low observable testing. Have any technical problems been uncovered that we expected or that were unexpected? And if so, please explain them.

Secretary CHENEY. The B-2 performance during flight tests has been exceptional and confirmed by the Defense Science Board (DSB) reviews. The DSB's review of Block I, early performance testing, stated, ". . . from the results of Block I testing that we have seen, we note no technical or performance problems that would lead us to challenge range and payload performance expectations for the B-2. Nor have we observed any flight worthiness or aerodynamic problems that give us cause for program caution." The DSB reviewed the initial Block II testing, preliminary low observable measurements and found "no substantive signature surprises." The flight test program has been successful in demonstrating the B-2s capability and uncovering design issues that can only be discovered in full-scale flight tests.

The B-2 design issues which have been discovered and are currently under investigation are as follows: first, the flight control system continues to undergo adjustments on the positioning of the flight control surfaces while maintaining low observable constraints. Aircraft controllability is not an issue. Second, higher exhaust temperatures and unexpectedly high acoustic levels have caused cracking in the engine aft deck. While this issue is under investigation, procedures have been initiated to minimize impacts on the flight test schedule. Third, nuisance problems in the environmental control system, such as improper valve operation, have been resolved by improved manufacturing procedures. Finally, the low observable testing to date has not uncovered any major design issues.

In summary, we consider the B-2 design to be sound and the flight test program has not uncovered any "show stoppers."

Questions Submitted by Senator Alan J. Dixon

STRATEGIC MOBILITY

Senator **Dixon**. Secretary Cheney, I am concerned with our ability to move our troops and materiel on short notice over long distances. Although our record in Desert Shield/Storm on the surface appears favorable, we must remember that we had the luxury of time, over 5 months, without any hostile action against our lines of communications, as well as favorable landing/refueling/overflight rights. Additionally, I have heard that approximately 50 percent of our sealift came from foreign ships, an asset which may not be available the next time. What significant changes to our strategic sea and airlift are you proposing?

Secretary **Cheney**. The investments we made in strategic mobility in the 1980s paid off in Operations Desert Shield and Desert Storm. Without the enhancements in airlift, afloat prepositioning, and sealift that they made possible, we would not have been able to deploy our forces as quickly as we did. There were several factors that worked in our favor, not the least of which was the strong coalition that the President was able to build and maintain throughout the operation. Our friends and allies did move 25 percent of the sealift cargo, which not only served as a visible symbol of support for the operation but also enabled the deployment to be conducted without requisitioning ships from the U.S. Merchant Marine.

The experiences of Operations Desert Shield and Desert Storm reinforce the need for the continued investments in airlift, afloat prepositioning, and sealift reflected in the fiscal years 1992-1993 budget. The six C-17 aircraft for which we are requesting funds in fiscal year 1992 and the 12 planned for procurement in fiscal year 1993 will add to our airlift inventory a system that will enhance our ability to deploy forces in the future. Our tactical lift capabilities will be enhanced through the modernization, beginning in fiscal year 1992, of the C-130 aircraft in Active Air Force airlift squadrons. Afloat, we will maintain three Maritime Prepositioning Ship squadrons for the Marine Corps as well as prepositioning ships for the Army, Air Force, and Navy. Beginning in fiscal year 1993, we plan to allocate funds for the sealift program that is now being defined by the Mobility Requirements Study.

PERSONNEL STRENGTHS

Senator **Dixon**. I am concerned with the projected end strengths you are projecting in light of Desert Storm. Are you currently planning the approximate 200,000 manpower reduction in fiscal year 1991-1992 to achieve the projected end strength for fiscal year 1992? Will this level be achievable with the size of the force required to support Desert Storm?

Secretary **Cheney**. The Department will take the necessary action consistent with the law to accomplish its planned restructuring of the Armed Forces. The U.S. Armed Forces will at all times be capable of defending the United States and its vital interest.

Senator **Dixon**. Secretary Cheney, Greece and Cyprus have stood shoulder to shoulder with the United States from the beginning of the Persian Gulf crisis. I understand that, even though they have suffered economically, they have never asked for compensation. Is there anything further that the United States would like to see Greece and Cyprus do?

Secretary **Cheney**. Both Greece and Cyprus, like many other allied and friendly countries, were supportive of the U.N. resolutions and sanctions, and aided coalition forces in Operation Desert Storm by allowing overflight and base access. The Greeks offered medical support and combat air patrols. The presence of the Greek frigate in the Red Sea helped enforce the sanctions and was especially appreciated. We believe that both countries contributed significantly to the coalition effort.

Senator **Dixon**. Maintaining the military balances among our friends like Egypt and Israel has served U.S. interests and world peace very well. The military balance between Greece and Turkey has preserved the stability of the eastern Mediterranean, which is vital to our efforts in the Persian Gulf today. The 7:10 ratio in military aid to Greece and Turkey has been our main tool for maintaining the balance and is neither a punishment nor a reward. As recently as 1987 there was a danger of war between these two nations. Do you think it is in the interests of the U.S. to preserve the military balance between Greece and Turkey?

Secretary **Cheney**. Greece and Turkey are NATO allies with different military needs and requirements. Both countries are important to us. The value of our relationships has been clear in a NATO context for decades. This was demonstrated recently in a dramatic way by the extraordinary cooperation we received from both countries during the Gulf conflict. We believe we should assist each nation according to its valid military requirements.

QUESTIONS SUBMITTED BY SENATOR JOHN GLENN

FISCAL YEAR 1992 MILITARY END STRENGTH

Senator GLENN. Secretary Cheney, the budget request proposes a fiscal year 1992 active duty military end strength that is 200,000 below the current level. Do you anticipate any problems at this time with any of the military services executing their share of the reduction? Would any of the military services have to involuntarily separate active duty military personnel in order to achieve the fiscal year 1992 end strengths you propose?

Secretary CHENEY. The budget request for fiscal year 1991 active duty military end strength is approximately 157,000 below the fiscal year 1990 actuals. It is expected that all of the services will need to involuntarily separate some service members to achieve the budget levels the administration and Congress agreed to last year.

STRENGTH LEVELS IN AMENDED BUDGET

Senator GLENN. With regard to the strength levels in the budget, Lt. Gen. Donald Jones, the Deputy Assistant Secretary of Defense for Military Manpower and Personnel Policy, is quoted as saying: "At a minimum, we will ask for a delay in making the 1991 force cuts. But the issue may be larger than that. We have to rethink the whole idea of having a smaller force. If the Middle East crisis had happened 5 years from now and we had gone ahead with the drawdown, we would not have the manpower to pull it off." Do you expect to submit an amended budget that would significantly alter the reductions you propose in the budget we just received?

Secretary CHENEY. The Department will take the necessary action consistent with the law to accomplish its planned restructuring of the Armed Forces. The U.S. Armed Forces will at all times be capable of defending the United States and its vital interests.

MANPOWER

Senator GLENN. The budget proposes a reduction in Selected Reserve strength over the next 5 years of 270,000 (23 percent) over the next 5 years. What is the basis for this reduction?

Secretary CHENEY. The diminution of the threat to our national security is the basis for the ongoing review of our current force structure. The post Cold War environment has ushered into being the presence of a new world order which will dictate the future shape of our military forces. In August 1990, President Bush outlined the concept of reconstitution which will allow us to rely not solely on existing forces, but to generate wholly new forces should the need to counter a global threat reemerge. The restructuring of our forces takes into account our need for forces to provide forward presence and rapid response in a crisis. At the other end of the spectrum, forces that can be reconstituted, whether Active or Reserve, will be cut considerably. We built the current reserve structure based upon our needs in the Cold War environment. The smaller Reserve force of the future will have a different mix with respect to missions and unit types. The mix will be based on the new strategy.

Senator GLENN. Do you plan a reduced role for the National Guard and Reserve components? For example, the Total Force Study Report we received early this year indicates the following assumptions with regard to the future of the National Guard and Reserve forces:

Contingencies of less than 30 days. No Reserve forces would be activated. The Active component would be relied on solely to respond. Individual National Guard or Reserve volunteers with needed skills would be accepted as augmentees.

Contingencies of less than 60 days. No Reserve combat forces would be used. National Guard and Reserve combat support and combat service support forces would be used as needed to augment or back-fill Active components.

Contingencies of over 60 days. National Guard and Reserve forces would be used. Included in these forces would be roundout combat units for later deploying Active forces, as well as forces needed to maintain a rotation base.

General purpose forces would continue to be retained in the National Guard and Reserve force structure—some would be maintained at lower readiness levels that would require at least 1 year to reach satisfactory combat readiness.

Wouldn't these assumptions practically strip the National Guard and Reserve components of their existing early deploying combat role and relegate the entire National Guard and Reserve to a reinforcing, reconstituting backup role?

Secretary **Cheney**. We accomplished an enormous buildup of our reserve structure, over the last 10 years in response to the Soviet threat. The relative role of the Guard and Reserve is expected to remain about the same, but its composition will be markedly different. Those forces within the National Guard and Reserve which best support the preservation of forward presence and crisis response missions and objectives are likely to be retained or increased from their present size and composition.

CONTINGENCY FORCES

Senator **Glenn**. General Powell, in your statement you discuss the establishment of "Contingency Forces," to respond to unexpected and unpredictable future crisis. You further state that ". . . these forces must be mobile, flexible, fast, and lethal." If I hadn't read your testimony, I would think you were describing the roles and missions of the Marine Corps. Would you please give the committee additional information, background and composition of these Contingency Forces?

General **Powell**. In the joint warfare environment, each of the services brings unique capabilities and qualifications with it to the battlefield. The Contingency Force follows the same model. Using the unique capabilities of each of the services, these "tip of the spear" forces are the first into action. They are followed into action, as required, by heavier forces and long-term sustainment packages. They are fully trained, highly ready forces that are rapidly deliverable, largely self-sufficient, and drawn primarily from the Active force structure. Contingency forces are composed of Army airborne, air assault, light, and highly mobile heavy divisions; Navy forward-deployed CVBGs, ARGs, and attack submarines that can be reinforced by additional forces surged from CONUS; Marine forward-deployed expeditionary forces and pre-positioned equipment and supplies for MEBs; selected Air Force capabilities including long-range bombers; and SOF units from all services.

There is no intent to redefine roles and missions of any of the Armed Forces. Each brings unique talents, capabilities, and systems with it. We intend to use the best from each to gain the synergy inherent in joint warfighting. In regions where no U.S. forward presence is found, contingency forces will be the tip of the spear, providing immediate U.S. presence and a clear statement of our political will and intent. They will also be called on to rapidly reinforce forward deployed forces as part of our measured response options.

PERSIAN GULF LESSONS LEARNED

Senator **Glenn**. Secretary Cheney, General Powell, it appears that some of our newer weapon systems, as well as many older systems, have been very effective in the ongoing air war.

On paper, we were facing one of the most formidable air defense systems in the Third World. Nevertheless, we have been extremely successful in neutralizing the system and conducting day and night precision bombing raids.

I believe that it is too early to firm-up a "lessons learned" list, but I hope we can do so before we mark-up the budget this year. I would be very interested, however, in your initial assessment of the effectiveness of our weapon systems and does this budget request reflect any early lessons learned?

Secretary **Cheney**. Efforts to learn what worked, what did not, why, and what we should do in the future, are well underway.

Although the budget was compiled prior to the beginning of hostilities, it reflects our confidence in the type of weaponry that was employed so successfully in Operation Desert Storm. Our early assessments indicate that our precision guided munitions, and the platforms which deliver them, are achieving results in the combat environment that meet and in some cases exceed the predicted results of analyses and tests. Our electronic countermeasures and initial employment of "stealth" have kept friendly aircraft losses phenomenally low. In a similar vein our Patriot missiles have been very successful against the SCUDS.

Our budget request contains substantial funds for the continued procurement of these proven modern systems, development of important follow-on systems and funds to support training of the men and women who operate them.

SPECIAL ACCESS (BLACK) PROGRAMS

Senator **Glenn**. Secretary Cheney, I respect the very difficult decision you had to make on the A-12. I hope and trust, however, that the Navy is urgently working on a follow-on program to replace the aging A-6 fleet—which by the way, as you well know, is doing a magnificent job in the Gulf in spite of its age.

My question concerns excess use of Special Access Programs which the A-12 was. Both the Navy and DOD IG investigative reports on the management of the A-12 acquisition program cited the fact that special access security restrictions may have impeded effective A-12 program management.

A recent Philadelphia Inquirer article indicated that this year's budget contains more than 100 special access (black) programs. This seems excessive to me.

Does DOD have a system for validating the need to classify acquisition programs as special access, and, if so, at what management level does this validation take place?

Secretary CHENEY. Yes, DOD does have a formal system for validating the need to classify acquisition programs as special access. The procedures for establishing special access programs are contained in Executive Order 12356, "National Security Information," DOD Directive 0-5205.7 "Special Access Program Policy," and Chapter 12 of DOD Regulation 5200.1R "Information Security Program Regulation." Specifically, only the Secretary of the Army, Secretary of the Air Force, Secretary of the Navy, and Deputy Under Secretary of Defense for Security Policy, as delegated by the Secretary of Defense, can approve the establishment of a special access program. As specified in paragraph 12-101 of DOD Regulation 5200.1R, before each special access program is approved by a service Secretary or the Deputy Under Secretary of Defense for Security Policy, a report of establishment must be provided. The report shall include: the rationale for establishing the special access program including the reason why normal management and safeguarding procedures are inadequate; the nature of the hostile threat that can exploit the inadequacy; and how the special security requirements will specifically compensate for those inadequacies. In addition, paragraph 14f of DOD Directive 0-5205.7 requires that the Deputy Secretary of Defense be notified and formally approve the funding of each special access program. The Department is reviewing its process for establishment and oversight of special access programs.

Senator GLENN. I have joined with my colleagues on the Senate Select Committee on Intelligence in expressing to President Bush my grave concern with the decision to terminate the SR-71 and have requested that the President direct the resumption of this unique capability to support Operation Desert Shield. Do you believe that National Technical Means have provided the same flexible coverage of the Persian Gulf as the SR-71? With so many American lives on the line in the Persian Gulf today, do you see any room for improvement in our reconnaissance capability that would warrant the resumption of the SR-71?

Secretary CHENEY. The National Technical Means, combined with tactical intelligence, surveillance, and reconnaissance capabilities, have provided outstanding support for the execution of the military operations of Operation Desert Storm. These capabilities have proven their flexibility. There is no need to re-start the terminated program for the expensive-to-operate SR-71.

Senator GLENN. The Soviet Union's data declaration at the time of the signing of the CFE Treaty is significantly at variance with the estimates of our intelligence agencies and would appear to be a significant underreporting of treaty-limited equipment (TLE). This factor, along with the Soviets' crackdown in the Baltics and the apparent resurgence of the military in the Soviet Union raises concerns in my mind about the wisdom of proceeding with the ratification of the CFE Treaty at this time. Given these factors, do you believe that it is in the national security interests of the United States to ratify the CFE Treaty at this time? If not, what conditions should be met by the Soviets before we ratify this agreement?

Secretary CHENEY. There are three problems that must be resolved to our satisfaction before we move to ratify the CFE Treaty. First, the Soviets did not count toward overall treaty equipment ceilings the tanks, artillery, and armored combat vehicles held by three motorized rifle divisions resubordinated to their Navy for coastal defense, by several naval infantry brigades, and by units in the strategic rocket forces. Not counting this equipment contravenes Article III of the treaty. Second, the data provided by the Soviets at treaty signature was inaccurate, and may have represented projections of what would be in the treaty zone at some later date, rather than what was actually present on November 19. Third, in the months preceding treaty signature, the Soviets moved tens of thousands of pieces of equipment out of the treaty zone east of the Urals, thus reducing their treaty obligation to destroy equipment in excess of treaty ceilings. While these withdrawals preceded treaty signature and violated no treaty provision, they undermine the spirit of the agreement.

Assuming that these problems are resolved satisfactorily, the ratification of the CFE Treaty would be in our national security interest. The CFE limits on Soviet equipment, combined with the elimination of Soviet forward-based forces in Eastern Europe, will severely limit Soviet military capabilities, and thus radically restrict realistic Soviet military expectations. The Soviet Union would be forced to breach CFE limits in violation of the treaty to regain some of its former military options.

The time necessary, however, to carry-out such a build-up and the continued geographic restrictions on Soviet deployments, effectively eliminate the element of surprise, and consequently allow NATO greater opportunity to prepare its defense.

Without CFE, there would be no restrictions on the residual forces kept in the European U.S.S.R., save those already imposed by economic pressures. The Soviets could increase forces in their western military districts without restriction, to the detriment of the security of both Eastern and Western Europe. With CFE, the deployment of Soviet forces in those districts is limited, so that the Soviets could not fully compensate for the loss of Eastern European forces (about 45 divisions in 1988) or for the loss of the geographic advantage of forward basing.

Thus, the successful implementation of the CFE Treaty would strengthen the security of the U.S. and its NATO allies. The CFE Treaty will formalize, and help safeguard, the sweeping changes which have occurred in Eastern and Central Europe in the last 2 years. Assuming the satisfactory resolution of the problems outlined above, the ratification and implementation of this treaty would advance the national security interests of the United States and our allies.

QUESTIONS SUBMITTED BY SENATOR JOHN W. WARNER

GROUND EARLY WARNING ASSETS

Senator WARNER. What assets do the U.S. forces in Saudi Arabia have that would give initial indication and warning of movement of Iraqi tanks toward contact? How has the Joint Strategic Targeting and Reconnaissance System (JSTARS) performed in this environment?

General POWELL. U.S. forces have a wide variety of airborne and ground based assets available that can provide initial indication of Iraqi tank movement to contact: [Deleted.]

Senator WARNER. In reference to Desert Storm, you have stated that, "One lesson learned is the value of Stealth" and pointed out that 40 percent of the first hour flown in support of Desert Storm were flown by 5 percent of our aviation assets.

While I realize that this statement is primarily in testament of F-117 performance, can any conclusions also be drawn on the requirement for stealth within Naval Aviation and the possible follow-on to the terminated A-12 program?

Secretary CHENEY. The success of the F-117 in Operation Desert Storm reaffirms the value of stealth. As I said when the A-12 program was canceled, we will still need to develop a next generation strike airplane for our aircraft carrier force to replace the aging A-6 aircraft. Stealth technology will be required if attack aircraft are to elude advanced fighters and surface-to-air missiles in the future.

THE RESTRUCTURED SDI PROGRAM

Senator WARNER. General Powell, during the President's State of the Union Address he announced a restructuring of the SDI program to a more near-term objective of providing defenses against a limited ballistic missile strike. In your opinion, does this mean that the country does not need to develop defenses for the JCS-validated threat for Phase I, or one readjusted for START? In other words, should we only develop defenses to meet limited ballistic missile strikes?

General POWELL. I do believe that the President's program is a sound one to take these steps to deal with the accidental launch concern that we have as well as the emerging ballistic missile threat that exists in a number of countries in the world.

Having said that, though, the JCS continues to believe in the Phase I requirement for the reasons I stated earlier, that the Soviet Union does remain the one country in the world that can destroy us and our way of life. So while still believing that there is an ultimate requirement for Phase I and for a full SDI program, within that we can fully support the reoriented program moving toward GPALS protection, the GPALS system. And we do not believe that those positions are in any way inconsistent.

THE SOVIET STRATEGIC NUCLEAR THREAT

Senator **Warner**. Secretary Cheney, you stated in testimony before the House Armed Services Committee that the Soviet Union is the only country that has the capability to destroy the United States. Yet the defense budget submitted to Congress on February 4, reduces substantially the funding for strategic modernization. Given the political and economic turbulence in the Soviet Union, which could lead to civil war, the reemergence of traditionalist in the leadership ranks, how can we justify such a reduction in our strategic modernization program?

Secretary **Cheney**. Funding levels for strategic programs, just as for defense programs overall, have been substantially reduced from previous levels based upon the current fiscal constraints levied against all Federal departments. The fiscal years 1992-1997 defense program stresses affordability in a time of decreasing defense budgets, while remaining true to the principles that have provided the foundation of our nuclear deterrent for over 30 years: force diversity; survivability and endurance; flexibility and effectiveness. Our budget submission is based on certain assumptions about the future strategic environment. If trends prove less favorable than we first projected, we may need to reconsider our future force planning.

Senator **Warner**. When Congress formulated the defense budget for fiscal year 1991, we did so largely in the belief that the threats facing the United States were diminishing. Since last year, we have entered into a major conflict in the Persian Gulf and seen the reemergence of traditionalists in the Soviet leadership and the influence of the Soviet military increasing substantially in their decision making process. Do you think Congress should rethink the assumptions upon which it sized the military budget for this fiscal year, and even for future years? Is the Department also rethinking the assumptions upon which it formulated its budget given these events in the world?

Secretary **Cheney**. We clearly recognized that certain threats were diminishing, particularly the threat of a short-warning Soviet attack on Europe that escalated to global war; but we also recognized that different threats were likely to emerge, many that we long recognized but which were paled by our overwhelming concern for the Soviet threat. Here, we felt the greatest challenge to our future security interests would derive from regional threats, very much the type of threat we just confronted in Iraq or the type of threat that remains on the Korean peninsula.

We also felt the Soviets posed a type of regional threat, not in the form of a multifront attack on Europe, but in a more limited objective attack on a flank, perhaps originating from instability within the Soviet Union. Our concerns over this, however, were tempered by the rapid pace of political, economic and military reform within the Soviet Union, reform that held great promise until very recently. It was on this basis that we formed the fiscal year 1991 request and now the fiscal years 1992/1993 request. The request is based on a strategy that accounts for regional threats, like that encountered in Iraq, and for the continued threat of terrorism, insurgency, and low-intensity conflict. It does not account for major reversals in the Soviet Union or outright failures in our ability to achieve conventional and nuclear arms control agreements with the Soviet Union.

If the future does not match our assumptions, we will not be able to reduce our forces as far or as fast as the budget request proposes.

NATIONAL GUARD ROUNDOUT COMBAT BRIGADES

Senator **Warner**. There has been a fair amount of controversy regarding the combat readiness of the three National Guard Roundout Brigades which were federally activated. There are those who have indicated their belief that these brigades should have been activated and deployed immediately with their roundout divisions while, in fact, we have them in an ongoing training period for what looks like at least 60 days or so. Would you give your view on the combat readiness of these brigades now and when they were activated?

General **Powell**. The combat readiness of these brigades has improved significantly since they were mobilized in late November and early December, primarily because of the conscious decision on our part to provide them with the same training opportunities as their active duty counterparts such as deployments to the National Training Center.

Senator **Warner**. Did the unit readiness reporting system give a clear picture of these brigades' combat readiness before they were activated?

General **Powell**. The measurement of combat readiness is an extremely complex subject and no single system provides an exact depiction of military capability in general or its subcomponent of readiness in p articular. Nevertheless, the Status of Resources and Training System quantifies a number of readiness indicators and told us that both additional resources and training would be necessary for all three brigades before they were capable of undertaking their full wartime mission. This does not mean they would not have been capable of undertaking major portions of the wartime mission for which they were designed. However, given the availability of fully capable active duty units and the fact that the roundout brigades trained primarily for employment in another theater, we opted to ensure the roundout brigades were fully resourced and trained before any deployment to the Persian Gulf.

Senator **WARNER**. Do we need to reconsider the current concept of roundout brigades for combat units?

General **POWELL**. In light of the changing strategic environment and the experience gained in Operations Desert Shield and Desert Storm, there are many things we should examine, and the roundout brigade concept is probably among them.

PERSONNEL

Senator **WARNER**. Secretary Cheney, last year the Congress directed that the Department of Defense reduce its end strength by 100,000 in fiscal year 1991. Events in the Persian Gulf will make that impossible. What relief from the mandated end strength will you seek?

Secretary **CHENEY**. The Department will take the necessary action consistent with the law to accomplish its planned restructuring of the Armed Forces. The U.S. Armed Forces will at all times be capable of defending the United States and its vital interests.

Senator **WARNER**. Secretary Cheney, last year the Congress mandated an end strength for each service for fiscal year 1995. I opposed this. In my opinion, the Congress should have set a total Department of Defense level for military end strengths in the out years, not service specific end strengths. If the Congress again attempts to set out year end strengths, would you prefer the Congress do it by service or give you a Department of Defense total?

Secretary **CHENEY**. The Department prefers maximum flexibility in managing its personnel resources.

Senator **WARNER**. General Powell, what is your opinion on this matter?

General **POWELL**. The events in the Persian Gulf will make it impossible to meet the fiscal year 1991 goal to reduce end strength by 100,000. As we approach the redeployment phase of the Desert Storm operation, the specific level of fiscal year 1991 end strength will become more clear. Legislation requested with the supplemental appropriation for Desert Storm will provide waiver authority for the increased end strength increment. As the services continue to plan to meet the fiscal years 1992-1995 strength levels in the President's budget, further relief may be necessary.

On the question of out year end strengths, I would prefer Congress set a total Department of Defense military end strength level. As the Department of Defense develops the new strategy of forward presence and crisis response, central control of the reduction will be required to provide the latitude to make timely and accurate decisions to maximize our capabilities.

Senator **WARNER**. Secretary Cheney, the Department of Defense Report on the Total Force falls far short of the mark. It has been suggested that Congress direct that the study be done external to the Department of Defense, similar to the Packard Commission. Congress did not, however, direct that the study be done in such a manner. Have you given any consideration to establishing such an outside panel to completely review roles and missions and force structure of the Active and Reserve component forces?

Secretary **CHENEY**. The Department of Defense believes that the administration and the Congress should continue to deal effectively with these issues.

OUTSIDE REVIEW OF ROLES, MISSIONS, AND FORCE STRUCTURE

Senator **WARNER**. General Powell, do you think there would be any benefit in an outside review of roles and missions and force structure?

General **POWELL**. No, I do not believe an outside review of roles and missions and force structure is necessary. In accordance with the Goldwater-Nichols Department of Defense Reorganization Act of 1986, the Joint Staff, along with staffs of the services and CINCs have reviewed adequately the roles, missions and force structure with particular focus on four important items:

a. Changes in the nature of the threats faced by the United States.
b. Changes in technology that can be applied effectively to warfare.
c. Unnecessary duplication of effort among the Armed Forces.

d. The required force structure needed to accomplish the present and future strategic goals.

I wish to emphasize, although this review is required not less than every 3 years, the Joint Staff continually assess roles, missions and force structure as part of an ongoing process to address the changing geopolitical and military climate.

Senator WARNER. Although the present war with Iraq has yet to be resolved, much thought is already being given to how future conflicts in the region might be avoided.

In your opinion, what type of security arrangement will be necessary in the post-war Persian Gulf region? Should the United States be involved in any such security framework?

Secretary CHENEY. What develops will require extensive consultation with our friends and allies in the region. They must have the lead. The United States has had naval forces in the Persian Gulf since 1949, a presence that should continue. We continue to look at prepositioning of equipment, joint exercises, and possible rotation of units on a regular basis as ways to enhance security.

Senator WARNER. Prior to the outbreak of hostilities, many in the Congress asserted that a war with Iraq would be a U.S. war and that our coalition allies would refuse to become involved in such a conflict.

Are you pleased with the participation of our coalition partners in the fighting thus far? Have you noticed any reluctance on the part of our allies to become involved in the fighting?

Secretary CHENEY. The forces of our coalition partners were instrumental in the success of Operation Desert Shield/Desert Storm.

MULTINATIONAL PLEDGES FOR PERSIAN GULF OPERATIONS

Senator WARNER. Mr. Secretary, since August of last year, many of our allies in the Persian Gulf crisis have committed to support the cost of conducting Operation Desert Shield, and now Operation Desert Storm. The current total pledges of cash and in-kind assistance is approximately $51.5 billion, for both calendar year 1990 and the first quarter of 1991. What is the expected timetable for receipt of all these pledges? Could you please bring us up to date on the amounts received under these pledges?

Secretary CHENEY. The amounts the U.S. requested and receipts are shown in the following charts:

DESERT SHIELD—CY 1990 Major Foreign Contributions[1]

[U.S. $ Millions]

Contributor	Commitments	Receipts		
		Cash	In-Kind	Total
Saudi Arabia	3,339	807	854	1,661
Kuwait	2,506	2,500	6	2,506
UAE	1,000	870	111	981
Japan[2]	1,740	866	457	1,323
Germany	1,072	272	531	803
Korea[3]	80	50	21	71
Others	3		3	3
Total	9,740	5,365	1,983	7,348

[1] Data as of February 22, 1991; in-kind receipts are as of January 31, 1991.
[2] Japan pledged $260 million to other coalition forces, for a total commitment of $2 billion.
[3] Korea pledged $15 million to other coalition forces, for a total commitment of $95 million.

DESERT SHIELD—CY 1991 Major Foreign Contributions[1]

[U.S. $ Millions]

Contributor	Commitments	Receipts		
		Cash	In-Kind	Total
Saudi Arabia	13,500	3,650	712	4,362
Kuwait	13,500	1,000	4	1,004
UAE	[2] 2,000		29	29

DESERT SHIELD—CY 1991 Major Foreign Contributions [1]—Continued

[U.S. $ Millions]

Contributor	Commitments	Receipts		
		Cash	In-Kind	Total
Japan	[3] 9,000			
Germany	5,500	2,160		2,160
Korea	305			
Others				
Total	43,805	6,810	745	7,555

[1] Data as of February 22, 1991; in-kind receipts are as of January 31, 1991; commitments are through March 31.

[2] An additional amount above the $2 billion is under discussion.

[3] Under consideration by Diet.

QUESTIONS SUBMITTED BY SENATOR STROM THURMOND

Senator THURMOND. Mr. Secretary, during the past 6 months, the Nation's focus has been on the Persian Gulf. Do you have any indication that the Soviet military has taken advantage of this preoccupation in terms of delaying troop withdrawals or increased modernization of forces?

Secretary CHENEY. Soviet troop withdrawals from East Europe have generally remained on schedule during the past 6 months. The withdrawal of Soviet forces from eastern Germany reportedly is currently on schedule, and can be completed by the target date of December 31, 1994. It appears the Soviets will meet their objective of complete withdrawal from Czechoslovakia and Hungary by the end of June, if not a bit sooner. In Poland, withdrawals have not yet begun. The Poles and Soviets are still negotiating the conditions and completion date for the withdrawal.

The Soviet modernization of both strategic and general purpose forces continues.

TOTAL FORCE POLICY CONCEPT

Senator THURMOND. General Powell, by all accounts the vast majority of the Reserve component units that were activated for Desert Shield and Desert Storm have performed well. The only elements that appeared to have failed to live up to expectation are the roundout brigades. How long has the Department known that these units were not combat ready and what actions were taken before the call up to get the units ready?

General POWELL. I would not characterize the roundout brigades as failing to live up to expectations. I am convinced these soldiers could have undertaken major portions of their wartime mission; although, we were well aware that these units would require additional resources and training before being categorized as capable of undertaking their full wartime mission. Given the necessity of a rapid response to the Persian Gulf crisis, we made a conscious decision to deploy a fully capable active duty brigade rather than the roundout brigade of the 24th Infantry Division. While readiness indicators were a factor in this decision, we also had to consider the uncertainty regarding mobilization authorities in effect at the time. With regard to actions taken before call up, only normal training activities were conducted. However, we made the decision to ensure these roundout brigades were afforded the opportunity to have collective training opportunities similar to their active duty counterparts, such as attending the National Training Center, before actual deployment in support of Operations Desert Shield/Desert Storm.

Senator THURMOND. Secretary Cheney, a lesson learned from Operation Desert Shield is that we need to improve both our airlift and sealift capability. Although the transportation command did a superb job with the assets on hand, there is an obvious need for the C-17 and fast sealift. I was disappointed to read in a recent article that the C-17 may be heading down the same road as the A-12. Would you give me your evaluation of where the C-17 program stands and can it meet the milestones the Department has established?

Secretary CHENEY. The test aircraft (T-1) achieved the assembly complete event-based milestone in December 1990, and is now undergoing ground vibration tests in preparation for qualifying the C-17 for first flight and the start of the flight test program this summer.

The C-17 program, like other major defense acquisition programs, will be required to meet the exit criteria established for each milestone in the defense acquisition process.

AMMUNITION

Senator **THURMOND**. General Powell, there have been persistent stories in the professional journals that our Desert Storm forces are facing shortages of specific types of ammunition. Would you tell us if we are having an ammunition shortage problem and if so what is the Defense Department doing to correct the situation?

General **POWELL**. For Desert Storm, there is no shortage of ammunition by target class i.e., Anti-Tank, Air-to-Air, and Anti-Radiation. While some of the preferred munitions in a particular target class may be in limited supply, secondary munitions for the same target class are more than adequate.

In the post Desert Storm environment, we will continue to evaluate potential threats worldwide to ensure that we have the right types and amounts of ammunition. As part of our evaluation, we will have to consider the benefits of technological superiority, the industrial base, and affordability.

Senator **THURMOND**. Mr. Secretary, as you are aware, the Department of Energy has revised the time schedule and number of reactors to be restarted for tritium production. It has also announced that only one New Production Reactor would be built. Could you tell us what impact these decisions may have on the Nation's nuclear weapons stockpile and are you concerned about these changes?

Secretary **CHENEY**. The Department of Energy (DOE) has advised that the tritium requirements for the nuclear weapons stockpile will continue to be met as long as DOE is able to restart one reactor as scheduled during the summer of 1991 and is allowed to operate at a power level of 50 percent. With this scheduled restart of one reactor during the summer of 1991, the DOE will be able to produce enough tritium to support national requirements.

The New Production Reactor program is absolutely necessary to insure that we will have an assured, reliable supply of tritium to support our nuclear deterrent in the next century.

CFE TREATY DISPUTE

Senator **THURMOND**. General Powell, I have seen various reports on the disputes between the allies and the Soviet Union on the Conventional Forces Europe Treaty. Can you tell us what the United States considers the most significant disagreement with the Soviet Union on this treaty?

General **POWELL**. The most significant disagreement involves Soviet failure to comply with the Conventional Armed Forces in Europe (CFE) Treaty Article III counting rules by excluding treaty limited equipment (TLE) in Soviet Naval Infantry (SNI), Soviet Naval Coastal Defense (CD), and Strategic Rocket Forces (SRF) from treaty numerical limitations.

The Soviet Union claims that the CFE Mandate clearly exempted naval forces. The Soviets further claim that strategic rocket forces are not "conventional" armed forces and thus not subject to the Conventional Armed Forces in Europe Treaty. In both cases, the Soviets claim that since these forces are not subject to the treaty, the equipment held by such forces is not subject to treaty numerical limitations.

Article III of the CFE Treaty clearly states that all battle tanks, armored combat vehicles, artillery, combat aircraft, and attack helicopters within the area of application shall be subject to the numerical limitations of the treaty unless exempted explicitly by Article III. Article III does not explicitly exempt naval infantry, coastal defense, or strategic rocket force equipment. Furthermore, CFE Mandate provisions are overridden by the CFE Treaty and the CFE negotiation record supports the fact that naval and strategic rocket force holdings of treaty limited equipment count against treaty numerical limits. Bulgaria and Romania are the only CFE Treaty signatories that have not refuted the Soviet Article III interpretation during ongoing CFE Joint Consultative Group sessions in Vienna, Austria.

The unilateral Soviet interpretation that naval and strategic force equipment are exempt from numerical limitation would leave significant treaty circumvention potential. Numerical limitations central to the treaty could be avoided simply by assigning treaty limited type equipment to the naval or strategic forces rather than to army or air forces.

Senator **THURMOND**. Mr. Secretary, there appears to be some political disunity among the allies supporting Operation Desert Storm. I am specifically referring to the Italian announcement that it supports the Soviet peace initiative. What impact has the Iraqi withdrawal offer had on the military coalition fighting Desert Storm?

Secretary **Cheney**. The coalition has shown a remarkable degree of unity throughout the crisis. The Iraqi's multi-conditioned withdrawal offer fell well short of meeting the requirements mandated by the 12 U.N. resolutions. Our coalition stood fast in requiring that Iraq comply with all the resolutions.

FORCE STRUCTURE REDUCTIONS

Senator **Thurmond**. General Powell, based on the budget proposal before us, the Department is planning to reduce the Selective Reserve over the next 4 years by almost one-fourth of its fiscal year 1987 level. Will these reductions be across the board or will you focus on specific type units?

General **Powell**. As Secretary Cheney detailed in his opening remarks, "the overall U.S. Reserve forces will decline by about the same percentage as Active forces. That circumstance, however, should not mask the fact that our future forces will not merely be a proportionally scaled-back version of today's force." Our focus, therefore, for Selective Reserve reductions will be on specific type units to develop the force composition required of the new strategy of forward presence and crisis response. With the recent threat of short notice global war diminished, a different mix of forces will be required. To this end, some reserve units may be scaled down or totally eliminated, while others may be completely retained or substantially increased. As an example, Army Reserve (and Active) components will be scaled down considerably while the Air Force Reserve will only be slightly reduced.

Senator **Thurmond**. Mr. Secretary, we keep hearing from B–2 opponents that you would never use the B–2 in a conventional war like Iraq. Let me ask you: if you had the B–2, would you use it in Iraq?

Secretary **Cheney**. The B–2 will provide the stealth of the F–117 and the range and payload of the B–52. When range and payload are considered, the B–2 provides greater value in terms of cost per pound of ordnance delivered than the F–117. Because B–2s will require far fewer support assets for refueling, defense suppression and electronic combat, far fewer lives will be placed at risk. Fewer support assets also means less logistic support, fewer bases required, less cost, and greater surprise. The B–2 delivers greater fighting power with a smaller combat force.

B–52S OVER BAGDAD

Senator **Thurmond**. General Powell, were the B–52s sent over Baghdad? Would you have sent the B–2 over Bagdad?

General **Powell**. [Deleted.]

Senator **Thurmond**. Mr. Secretary, as I understand it you have used about 400 Tomahawk cruise missiles so far—at a cost of about $400 million. How much would it cost to drop this much ordnance with a bomber?

Secretary **Cheney**. It is very difficult to compare costs based solely on ordnance weight. To drop the same amount of ordnance from a B–52 would take approximately 11 sorties and cost $1.374 million for the gravity munitions dropped. Other factors such as the cost of the aircraft, training for the crews, fuel to fly the mission, survivability of the aircraft, accuracy of the weapons, and required damage to the target must also be considered. The bomber can deliver a large amount of a wide variety of munitions against fixed or moving targets. The Tomahawk is an unmanned, long range weapon which can hit heavily defended targets with pin point accuracy. The Tomahawk is a single shot system while the bomber can be used day after day. It is essential to evaluate the total systems with their associated capabilities to obtain an accurate cost comparison.

F–117 SUCCESS

Senator **Thurmond**. General Powell, you had impressive success with the F–117 stealth fighter-bomber. But you were able to base this plane a few hundred kilometers from Baghdad. What would you have done if you did not have nearby bases?

General **Powell**. [Deleted.]

Senator **Thurmond**. Secretary Cheney, the United States has not been able to make a nuclear weapon for nearly 2 years now. Are you satisfied that DOE is putting high enough a priority and enough resources on getting the W88 warhead into production?

Secretary **Cheney**. The Department of Energy (DOE) advises that it is making every effort to resume production of nuclear warheads. The W88 warhead will have a high priority when we resume production.

MX MISSILE RELIABILITY

Senator THURMOND. General Powell, the JCS has agreed with the Strategic Air Command that they can cut almost 60 percent of the reliability test flights of the MX missile. I have two questions: isn't it correct that it will now take 7 years to find a 10 percent degradation in reliability? And second: have we ever had a missile system that did not develop some serious problem over its lifetime?

General POWELL. Peacekeeper's operational test plan covers the system's 15 year life-cycle in a two phased program. However, depending on the deployed force size, the established goals for confidence level and system degradation vary.

[Deleted.] This equates to a 14 missile Phase I test program for Peacekeeper. Four missiles from developmental test and evaluation and 10 missiles from operational test and evaluation will provide the necessary Phase I reliability and accuracy estimates by the end of fiscal year 1992. Phase II testing will consist of three launches per year for the remaining 12 years of the system's life-cycle. In light of this test plan, and the 15 year projected life of the system, the total Peacekeeper missile buy was therefore reduced to 114—halting production with fiscal year 1991 procurement.

Although we have encountered problems with several strategic missile systems in the past, we have solved them expeditiously and maintained an effective strategic deterrent posture. In this regard, we believe that the restructured Peacekeeper program provides us with an adequate margin of safety.

Senator THURMOND. Secretary Cheney, I note that the Department proposes to shut down the MX missile production line; the United States will have no ICBM production capability at all. Is this wise when the Soviets continue to keep several ICBM types in production?

Secretary CHENEY. The budget continues both the Peacekeeper and Small Missile programs, in the research, development, and testing phase. This will provide for the first test of the Peacekeeper/Rail Garrison missile from an actual launch vehicle. It is important to continue R&D activities in these areas, and it is important to develop the next-generation ICBM. But given the current situation—existing capabilities, on-going START negotiations, possible START II negotiations—it is important to keep the programs alive, but not to the point of recommending that we actually move to procurement and deployment of significant numbers of either the Rail Garrison System or the Small ICBM.

QUESTIONS SUBMITTED BY SENATOR TRENT LOTT

MILITARY READINESS

Senator LOTT. In your statements and preliminary budget data for fiscal years 1992 and 1993, you indicate substantial reductions in people, dollars, units, and acquisitions. As of this date, we have little insight as to the military capability of the resulting military forces.

Will the remaining forces have adequate funding for training, spares, ammunition, and facilities to ensure their readiness?

General POWELL. Budget reductions made us choose between a larger force structure that would be allowed to hollow out because we could not support it or a smaller more balanced force. We are trying to give you the most balanced force we can for the dollars that the Nation has said will be available to us.

We do not want to go back to a hollow force, but would rather have a smaller force that is well-trained, well-equipped, highly-motivated, and ready to go at a moment's notice. We think that is the only kind of force that makes sense for us to field and will continue to strive to meet that objective.

Senator LOTT. The U.S. states that it maintains military forces to deter potential enemies. The current level of forces was inadequate to deter Iraq. Iraq is considered a regional conflict. If we could not deter Iraq with the current force levels, how can we deter future regional conflicts and global strategic threats with a greatly reduced force?

General POWELL. Operation Desert Storm was a major regional contingency. The intent of the operation was to prevent Iraq from invading Saudi Arabia and enforce the 12 U.N. resolutions.

Deterrence remains the central motivating and organizing concept guiding U.S. military strategy. To increase the prospects for peace and stability, the U.S. requires a military establishment of global scope and great competence, with capabilities sufficient, to convince potential aggressors that the cost of aggression would exceed any possible gain and therefore would not serve their national interests. Our nuclear deterrence relies on credibly threatening to respond to a nuclear attack on the U.S. or our allies with a retaliatory attack that imposes costs which clearly exceed the benefits the aggressor hoped to achieve. Our conventional deterrence relies on the capability to defeat an adversary's conventional attack, thereby making the initiation of war an unacceptable option by denying the benefits of aggression. We will rely on a variety of approaches for implementing our deterrent policies, including power projection, forward presence, force reconstitution, alliances and collective security agreements, and arms control.

We will use four force packages and four supporting capabilities to deter future regional conflicts and global strategic threats. The four forces are: *Strategic Forces* consisting of the triad of ICBMs, SLBMs, and land based bombers; *Atlantic Forces* to protect U.S. vital interests in the Atlantic (including Europe), the Mediterranean Sea, the Middle East, and Southwest Asia; *Pacific Forces* to protect U.S. interests in the Pacific region including Southeast Asia and the Indian Ocean; and *Contingency Forces* for the spontaneous "come-as-you-are" crisis. Underlying supporting capabilities to these force packages are *Transportation, Space, Force Reconstitution,* and *Research and Development.*

Senator LOTT. These costs of meeting DOD environmental responsibilities, both past and present, are continuing to take more funds and an even larger percentage of the defense budget. Do you expect this trend to continue, and if so, how can you control these costs? What do you feel the impact of the proposed Federal facilities legislation, and resulting fines and penalties, will have on these DOD costs?

Secretary CHENEY. In fiscal year 1988, the Department spent over $1 billion on environmental requirements; in fiscal year 1991, DOD will spend over $2.5 billion. We expect this trend will continue until we reduce our backlog of environmental compliance and cleanup projects to implement our goal of becoming the Federal leader in environmental compliance and protection. The costs of keeping current operations in compliance are also increasing due to aging facilities and increasingly stringent Federal and often more stringent and differing State regulations. Differing State regulations can increase costs by preventing us from developing and implementing standard processes and approaches to solve our problems. In addition, costs of cleanup due to past activities are expected to increase over the near term as we move from the study to implementation phase.

Significant life-cycle cost savings can be realized by incorporating environmental awareness into all DOD activities, especially the acquisition process and through waste minimization initiatives. We are also promoting the use of improved technologies and improvements in the regulatory process. Other savings can be realized through base closure.

The Federal facilities legislation proposed last year could increase overall DOD environmental costs. The scope of any such legislation should be broadened to include other elements that would enhance the environmental performance of Federal facilities.

QUESTIONS SUBMITTED BY SENATOR DAN COATS

SDI

Senator COATS. All of us have been impressed by the success of the Patriot system in intercepting Iraqi Scud missiles. Thousands of lives have undoubtedly been saved. In my view, there are some important lessons to be learned by this success, particularly for the SDI program. While I recognize that Patriot has not been an SDI program, it has nonetheless demonstrated that ballistic missile defense works and is worthwhile. Would you please elaborate in as much detail as possible on what lessons you have learned from this experience?

Secretary CHENEY. Defenses against tactical ballistic missiles work and save lives. The effectiveness of the Patriot system was proven under combat conditions. Our defense policy needs to place greater focus on evolving threats to U.S. security, such as the proliferation of ballistic missiles and weapons of mass destruction to developing nations.

Senator COATS. SDI has always been intended to provide an alternative to the existing offense-dominant deterrent relationship between the United States and the Soviet Union. GPALS modifies this somewhat by focusing on limited protection, not deterrence per se. Could you explain what role, if any, GPALS will play in the deterrence equation, and what your plans are for continuing down the road of a transition to a more balanced form of offense-defense deterrence.

Secretary CHENEY. Having reviewed the changing nature of the threat the United States will face in the 1990s, the Department has adjusted the focus of the SDI program to reflect these changes. This adjustment is mandated by several factors:

— The increased threat posed by the proliferation of ballistic missiles;

— A concern that political instability could increase the potential for ballistic missile use; and

— A recognition of the continued pursuit of strategic arms reductions.

The initial objective of a defense deployment is to protect U.S. forces deployed overseas, U.S. power projection forces, U.S. friends and allies, as well as the United States itself from accidental, unauthorized, and/or limited ballistic missile strikes. Because this concept for a defense deployment stresses protection against ballistic missiles irrespective of their source, it is called Global Protection Against Limited Strikes (GPALS).

A GPALS deployment could provide an appropriate level of ballistic missile defense within the U.S. strategic force structure for the foreseeable future. At less than half the size of the Phase I architecture, a GPALS defense would be capable of meeting the initial objectives described above.

The decision to proceed with GPALS satisfies valid military needs and is consistent with preserving the potential for meeting the broader objectives of existing military requirements stemming from significant remaining Soviet strategic capabilities. If the U.S. decides that it needs to achieve more ambitious mission objectives at some point in the future, or if changes in the international environment result in a requirement to expand U.S. strategic defense efforts, the SDI program will have developed the systems and technologies required to do so. Such a decision would ultimately require consideration of the status of Soviet military power, and in particular Soviet strategic capabilities, and of political developments in the Soviet Union, progress in concluding and implementing U.S.-Soviet arms reduction agreements, and changes in the ballistic missile threats from Third World countries.

Because it addresses a threat of mutual concern—accidental and unauthorized launches and Third World proliferation—GPALS may facilitate progress at the Geneva Defense and Space Talks between the United States and the Soviet Union. At the June 1990 Washington Summit, the United States and U.S.S.R. committed to follow-on strategic negotiations aimed at implementing an appropriate relationship between strategic offenses and defenses. We believe GPALS provides the basis for success in such negotiations.

A GPALS defensive system would consist of the following:

— Space- and surface-based sensors to provide global, continuous surveillance and to track, from launch to interception or impact, ballistic missiles of all ranges. The use of space sensors would allow for a reduction in the size, cost, and number of surface-based weapons and sensors, while increasing their performance. In combination, the sensors would provide information to U.S. forces, and potentially, to those of our allies as well.

— Interceptors, based in space, on the ground, or at sea, capable of providing high-confidence protection to targets under attack. Space-based interceptors could provide continuous, global interdiction capability against missiles with ranges in excess of 600–800 kilometers. The surface-based interceptors, located in the United States, deployed with U.S. forces and, potentially, deployed by U.S. allies, would intercept any type of war head.

The Department's Theater Missile Defense (TMD) and SDI programs have been integrated. This will permit the United States to deploy significant surface-based theater defenses by the mid-1990s and, beginning in the late 1990s, to deploy surface- and space-based elements of a global defense capable of detecting, tracking, and intercepting ballistic missiles of all ranges and in all phases of their flight trajectory, should such a deployment decision be made.

An important result of the new GPALS policy approach is that out year funding requirements will be reduced substantially. Total out year funding costs for GPALS will be approximately 20 percent less than previous Phase I estimates for fiscal years 1992–1997. Research on follow-on technologies will continue to be funded, but at a more relaxed pace and schedule, to provide a hedge against future potential threats in the post-Cold War era.

Senator **Coats**. What is GPALS' relationship to the SDI Phase I concept? Can you provide any information on how the Joint Chiefs will construct a requirements document for GPALS and how these requirements will relate to existing Phase I requirements? Will Phase I requirements be modified?

Secretary **Cheney**. See answer to previous question.

[Whereupon, at 12:30 p.m., the committee meeting was adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEARS 1992 AND 1993

WEDNESDAY, MARCH 6, 1991

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

UNIFIED COMMANDS ORIENTED TO MOBILIZATION AND TRANSPORTATION OF CONVENTIONAL FORCES

The committee met, pursuant to notice, at 2:06 p.m., in room SR-222, Russell Senate Office Building, Senator Sam Nunn (chairman) presiding.

Committee members present: Senators Nunn, Exon, Levin, Kennedy, Dixon, Glenn, Wirth, Warner, Thurmond, Cohen, Lott, Coats, Mack, and Smith.

Committee staff members present: Arnold L. Punaro, staff director; Andrew S. Effron, general counsel; Richard D. DeBobes, counsel; and John N. McConnell, system manager.

Professional staff members present: Robert E. Bayer; Robert G. Bell; Richard D. Finn, Jr.; Creighton Greene; John J. Hamre; David S. Lyles; and Frederick F.Y. Pang.

Minority staff members present: Romie L. Brownlee, deputy staff director for the minority; Brian D. Dailey, George K. Johnson, Jr., Ronald P. Kelly, George W. Lauffer, Durwood W. Ringo, Jr., and Mark B. Robinson, professional staff members.

Staff assistants present: Kelli J. Corts, Barbara Gallo, Lisa H. Kettlewell, Cindy Pearson, and Mickie Jan Wise.

Committee members' assistants present: Andrew W. Johnson, assistant to Senator Exon; Kennedy N. Luongo, assistant to Senator Levin; William J. Lynn, assistant to Senator Kennedy; Charles C. Smith, assistant to Senator Dixon; Milton D. Beach, assistant to Senator Glenn; Jefferson B. Seabright, assistant to Senator Wirth; Terence M. Lynch, assistant to Senator Shelby; Dale F. Gerry, assistant to Senator Cohen; Samuel D. Adcock, assistant to Senator Lott; Eric H. Thoemmes, assistant to Senator Coats; Saul H. Singer, assistant to Senator Mack; and Thomas L. Lankford, assistant to Senator Smith.

Chairman NUNN. The committee will come to order.

OPENING STATEMENT OF SENATOR SAM NUNN, CHAIRMAN

Chairman Nunn. This afternoon the committee begins to receive testimony, as we do each year, on our unified and specified commands and from our unified and specified commanders on the implication in their areas of the changes in our military strategy, on the impact of the changes in the fiscal years 1992–1993 budget request and the Future Years Defense Program, and on their role in recent operations in Southwest Asia. Specifically, we asked each of the commanders to testify on the following subjects:

— To review their command's role and responsibilities in providing forces and deploying forces to Southwest Asia in support of Operation Desert Storm;

— To characterize the military strategy that they were given for making their long-term plans and how the Future Years Defense Program supports implementation of the military strategy, and how those plans are complicated by operations in Southwest Asia; and

— To review the implementation of the Goldwater-Nichols Act and how this legislation facilitated their command's ability to support Operation Desert Storm/Desert Shield, or, if it did not, certainly we want to know that also.

Secretary Cheney, in his testimony to the committee, outlined in impressive detail a new defense strategy. General Powell joined in and gave many of the details. There were several elements of that strategy that have a special significance for our hearing today. Secretary Cheney stated, "we must retain the forces and mobility to respond to crises and to reinforce forward units." He went on to state, "we must retain the national capacity to reconstitute forces should this be needed." I agree with these elements of Secretary Cheney's strategy. These are some of the elements that we discussed at length last year and incorporated when we marked up our last year's authorization bill.

These three commanders have a key role in implementing these new elements of the new strategy. Gen. Edwin H. Burba, Jr., is the Commander in Chief of the U.S. Forces Command and has responsibility for organizing and training U.S. Army personnel in the United States and ensuring that they are ready to reinforce the forces of forward deployed forces. General Burba is directly responsible for the training and readiness of the Army Reserve component forces, which directly relates to the reconstitution element of Secretary Cheney's strategy.

Gen. Carl Stiner is the Commander in Chief of the U.S. Special Operations Command. The Special Operations Command is a joint command with forces of each of the services. General Stiner is responsible for ensuring that the war fighting CINCs have ready and trained Special Operations Forces, as needed. Special Operations Forces are increasingly important in the emerging, complex world that we face.

Gen. Hansford T. Johnson is the Commander in Chief of the U.S. Transportation Command. TRANSCOM has the responsibility for deploying U.S.-based forces and keeping them resupplied. This is at the core of the strategy that relies on reinforcing forward units. I think we have seen so many spectacular displays of high technology weapons, but we have not looked at the logistics of the airlift and the sealift that have performed miracles in making this operation successful. I hope we will hear a lot more about that because that has been an enormously important part of this success.

One area that we will explore with our witnesses this morning is the effect the military force packages, described by General Powell last month before this committee, will have on their commands. General Powell testified that, to implement our strategic concepts and accomplish all of the missions we require of our forces, there would need to be four basic military force packages and four supporting capabilities.

The four basic packages include Strategic Forces, Atlantic Forces, Pacific Forces, as well as Contingency Forces. The four supporting capabilities include a Transportation Capability, a Space Capability, a Reconstitution Capability, as well as a Research and Development Capability.

Let me take this opportunity to congratulate each of you for the splendid work you have done and the people in your command in support of Operation Desert Shield and Operation Desert Storm. These operations could not have been possible without your efforts. I'm sure you take great satisfaction in knowing how well your people performed in this military campaign.

Before we turn to each of our witnesses today for their statements and then go to questions, I'll ask Senator Warner for any opening comments he might have.

Senator WARNER. Thank you, Mr. Chairman. I join you in welcoming these three distinguished Americans. You are here, in presence, not only for yourselves but for the subordinates, tens of thousands of subordinates at all ranks, from flag down to lance corporal, who provided one of the greatest chapters of military leadership, military achievement in the annals of the history of this world. I have had the privilege of working very closely with two of you and hope to get to know the third better through this hearing and in other ways.

General Stiner, I remember it was just about a year ago that Senator Nunn and I saw you in operation as a troop commander, at that time down in Panama. This is the first opportunity we have had to have you before the committee in your new responsibility.

But the Special Operations Forces, which, indeed, was a product in many respects of Congress—Senator Cohen, who is here, being one of the principal architects of that legislation—that organization has written an extraordinary chapter in this Gulf operation. I presume you are not at liberty to discuss a number of those operations. But, to the extent that you can, it is important for the American public because individual actions of bravery by your persons, those under your command in this conflict, rate full recognition by our entire country, and you, yourself, for having trained and directed these troops, and motivated them. Thank you.

Chairman NUNN. Thank you, Senator Warner. General Burba, we'll start with you for any comments, followed by General Stiner and General Johnson. Then we will open it up for questions. Again, we welcome you.

STATEMENT OF GEN. EDWIN H. BURBA, JR., USA, COMMANDER IN CHIEF, U.S. FORCES COMMAND

General BURBA. Thank you, sir. Mr. Chairman and distinguished members of the committee, I am very honored to be here today to again present the Forces Command's perspective on important defense issues.

I have prepared a written statement and I request that it be entered in the record. I have a brief oral statement that I'd like to make and then would follow it up with your questions.

Chairman NUNN. Without objection, each of the prepared statements will be in the record. We don't want you to feel too pressed on time. We appreciate your summary. But don't feel pressed, because we are here to hear from you.

General BURBA. Sir, my testimony is presented against the backdrop of the largest, fastest mobilization since World War II. Operation Desert Storm reminded us that regional does not necessarily equate to small or light. America's need for highly ready, trained, and technologically advanced heavy as well as light forces has been validated.

The strong support of Congress and, indeed, of this committee particularly ensured that, when America was called upon to check aggression and protect our allies, we could do so decisively, with the least possible loss of life to all concerned.

The Forces Command's role in Operation Desert Storm was one of task organizing, mobilizing, training, and deploying Army units to Southwest Asia in support of U.S. Central Command. In addition to troops deployed to Saudi Arabia, we back-filled European and Continental U.S. installations with doctors, military police, mechanics, garrison administrators, and other support personnel. Further, we intensified our efforts in key asset protection against terrorism, continued the war against drugs, and reconstituted, trained, and field validated a light contingency corps for quick response to non-Operation Desert Storm crises.

We have deployed over 136,000 soldiers from our Continental U.S. Base Active Component Forces, and called to active duty over 139,000 Reservists and National Guardsmen from over 2,000 towns and cities in every State throughout the continental United States, the District of Columbia, Guam, and Puerto Rico.

FORCECOM used over 40 mobilization sites and deployed our troops from a multitude of airports and seaports throughout the country. One of the important highlights of the Operation Desert Storm operation is the outstanding performance of our Reserve components.

There are many lessons to be learned from Operation Desert Storm, and we are beginning to benefit from our analysis of them already. The most important lesson, however, is that the crisis did, indeed, occur—it was not a planning scenario—and that the socioeconomic and political forces which precipitated it will continue to exist in other parts of the world for many decades.

Instability in Central Europe and the Middle East is an obvious precipitant of potential conflict in the near-term. But other complex forces in other parts of the world, with prevailing uncertain conditions, could cause short-fused conflict there as well.

Politico-military multi-polarity will prevent the deterrence of many of these conflicts, and economic interdependence will preclude our isolation from them. Our budget deficits and non-defense priorities will mitigate against maintaining an Active component force sufficiently large and modern enough to deal with many of these potentially large and lethal regional conflicts. They are large and lethal because of the burgeoning populations of lesser developed countries and the wholesale migration of high tech weaponry to them.

FORCE STRUCTURE: AC–RC MIX

For these reasons—too many threats/too few forces—our Reserves must play an increasingly important role in our strategy and structure for the future. However, that role cannot be executed by standing pat with current structure and readiness postures and, in so doing, destabilizing Active structure and other Reserve and Active duty readiness underpinnings.

We must have a proper balance between Active and Reserve structure, research and development, procurement, infrastructure, and training programs. The proper mix of Active (AC) and Reserve (RC) component forces and the proper balance of combat and support missions have been the crux of recent deliberations between Forces Command and its higher authorities in the Defense Department.

I know there has been concern that this discussion has fallen prey to a negotiated position, a "share the pain" approach. That would not be a sound strategy and that is not how we have shaped the future AC–RC mix.

How have we done it, then? Gaming methodology, coupled with empirical insights from Operation Desert Storm determined how many of what type combat and support units are required when. When they are required is important because the more time available, the more likely you can use Reserve component units.

We made the assumption up front that all units that could be Reserve components will be Reserve components. If a ready RC unit could arrive in time, that was the unit that we selected. Our results approximated those of the Joint Chiefs of Staff and the Department of the Army.

There were generally equal reduction in both AC and RC structure. But it was not a "share the pain" approach that got us there. Our Army is truly an integrated, total force. If you cut Active divisions, you will cut Reserve support units at echelons above division and echelons above corps.

For a whole variety of reasons, we would like to keep every man and woman in the National Guard and Army Reserve. I cannot tell you how strongly I feel about that. I've spent over 50 percent of my time, I'd say, with our Reserve units in this past year. They are great soldiers. But we simply cannot do it without compromising the readiness of the remaining of the Active and, importantly, the remaining Reserve forces in putting us at a high capability risk.

STRATEGIC MOBILITY

I must salute the absolutely magnificent performance of General Johnson and TRANSCOM in deploying our forces to the Gulf, given the assets available. He and I agree, however, that TRANSCOM needs more and better air- and sea-lift. The ongoing study by the Joint Staff should give more precise definition to our requirements. A general discussion of those requirements from our perspective was laid out in my prepared written statement. I also lay out why the C–17 continues to receive our very strongest support.

DEFENSE PROGRAM

We now look ahead to the complex and uncertain era before us that was described to your committee by the Secretary of Defense and the Chairman on February 21. Given the strategy and concepts for force structure laid out in that testimony and the resourcing levels embedded in the Army's budget and program, I support the funding levels as submitted. I may do that at the risk of compromising my credibility for independent analysis. However, the Goldwater-Nichols legislation indeed works just as well for planning and programing as it did in the execution of Operation Desert Storm.

I have been fully included in the development of the defense program submitted to the committee. Changes to that program were made to accommodate Forces Command's concerns. We did not get everything we wanted. But, in the final analysis, we could not disagree with the decisions that were made during the trade-off analysis and the decrement drills. I am confident that through a cooperative process with this committee and Congress we will end up with a balanced program that will perpetuate a quality force that has contemporary relevance, has led to our recent success in the Persian Gulf, and of which America is so proud.

CARING FOR PEOPLE

As we strike this balance, however, let us not forget our soldiers, civilians, and families. When our soldiers come home from Operation Desert Storm or from wherever they serve to protect America, we must ensure that they come home to a post they can be proud of and to a family we are in a position to take care of. Soldiers, civilians, and families have proven their loyalty, quality, and dedication. We have a responsibility to take care of them as we draw down. If we take the force down too quickly and fracture it, we will cause great personal pain to those who have served us so well.

Personnel reductions must be made, however, and they must be made in a deliberate fashion, to preclude unnecessarily severe reductions in force, forced early retirements, and other actions which reduce readiness and compromise us as a grateful nation. Our people are the critical difference and our greatest asset.

Thank you for this opportunity to appear before the committee. I welcome your questions.

[The prepared statement of General Burba follows:]

Prepared Statement by Gen. Edwin H. Burba, Jr., Commander in Chief, Forces Command

Mr. Chairman, and distinguished members of the committee, I am deeply honored to appear once again before the Senate Armed Services Committee to present Forces Command perspective on our critical defense issues.

Secretary of Defense Cheney and Chairman of the Joint Chiefs of Staff Powell have testified on the President's vision of the new military strategy with focus on regional contingencies and have described our extensive commitments around the globe. Our status as a superpower demands our involvement; we are serving our own national interests when we foster stability and freedom throughout the world.

When I last appeared before this committee, it was against a backdrop of the long overdue fall of the Berlin Wall and all it stood for and the fast-moving emergence of new democracies and free market economies in Eastern Europe. The Warsaw Pact, which had opposed us for over four decades, was crumbling before our eyes. The Soviet Union was continuing on a clear path to democratization and arms reduction. We had recently completed the very successful Operation Just Cause in Panama. Extreme volatility and uncertainty characterized our world, but the trends all seemed positive.

Skepticism about the relevance of the role of America's Armed Forces was a dominant theme of political-military discourse. With the "loss" of the Soviet and Warsaw Pact threat, and with limited military operations such as Just Cause appearing to set the norm for our regional contingencies, many saw a peace dividend and even deeper cuts in the military force structure as desirable; the need for a strong military was not apparent. We were pressed to relegate our heavy forces to a greatly reduced role in a smaller, lighter Army.

Today, I appear before you with a different backdrop. We have just completed the largest, fastest mobilization since World War II. Operation Desert Shield/Storm demonstrated a clear need for heavy, conventional forces, and provided an unhappy reminder that "regional" does not necessarily equate to "small" or "light." Finally, the encouraging trends in the Soviet Union have begun to become less clear with recent crackdowns in the Baltic states and the increasing reactionary influence within the Soviet leadership.

America's need for highly ready, trained, and technologically advanced heavy and light forces has been validated by Operation Desert Storm. As we move to a smaller structure in response to the demands of fiscal austerity, we must not lose sight of this need.

Forces Command's role in Operation Desert Storm was one of task organizing, mobilizing, training and deploying Army units to Southwest Asia in support of U.S. Central Command. We rapidly deployed a deterrent force within 18 hours of notification. The XVIII Airborne Corps, with the 82d Airborne Division and elements from the 101st Air Assault Division fulfilled this role.

This deterrent force was rapidly followed by other heavier units to stabilize and defend Saudi Arabia. This mission was accomplished by the deployment of the remainder of the 101st Air Assault Division, two heavy divisions (the 24th Mechanized Division and the 1st Cavalry Division), one armored cavalry regiment (the 3d ACR), and numerous combat support and combat service support elements. Many of these latter units were mobilized from the Reserve components and fulfilled critical roles and missions at echelons above division and echelons above corps.

During the follow-on phases, Forces Command provided one division (the 1st Inf Div) to Europe's VII Corps and many other combat support and combat service support units for that corps. We have deployed over 136,000 soldiers from our Continental U.S.-based Active component force, and called to active duty over 139,000 reservists and National Guardsmen from over 2,000 towns and cities in every State throughout the Continental United States, District of Columbia, Guam and Puerto Rico. FORSCOM used over 40 mobilization sites and deployed our troops from a multitude of airports and seaports throughout the country. In addition to troops deployed to Saudi Arabia, we backfilled European and Continental United States installations with doctors, military police, mechanics, garrison administrators and other support personnel.

We consider the performance of our reservists to be one of the major success stories of the operation. None of this would have been possible without the superb work of our five Continental U.S. Armies (CONUSAs) and their extensive interface with State National Guard organizations and Army reserve commands. Our centralized oversight yet decentralized execution modus operandi permitted the essential and substantial cross-leveling of personnel and equipment to be executed expeditiously and effectively. While their equipment was being deployed, all soldiers received extensive training by our readiness groups, active and reserve schools, active divisions and technical agency mobile training teams, plus their own organizations. They were validated combat ready in a structured process administered by mobilization station commanders before they deployed.

As with the Just Cause operation in Panama, the efficient command lines implicit in the Goldwater-Nichols legislation worked well. In addition to working with the Chief of Staff of the Army, my direct interface with the Chairman of the Joint Chiefs of Staff, CINC Transportation Command, and CINC Central Command was particularly useful in making timely decisions. This alone made an important difference during the mobilization and deployment phase of Operation Desert Storm. Joint training paid dividends as we were able to field units familiar with the SWA theater of operations and experienced in combined arms warfare with our allies and sister services.

While all of us have been focused on the crisis in Southwest Asia, Forces Command has remained active and vigilant in executing other missions central to the protection of U.S. interests. Threats of terrorism associated with Operation Desert Storm intensified our work in Key Asset Protection, and the counternarcotics mission continued to be a high priority. We have shifted assets and moved forward with planned counterdrug operations. Again, much of this support has come from our citizen soldiers. Finally, we reconstituted, trained and field validated a Light Contingency Corps for short-fused responses to non-Desert Storm crises.

We now look ahead to the complex and uncertain era before us that was described to your committee by the Secretary of Defense and the Chairman of the Joint Chiefs of Staff on 21 February. Given the strategy and concepts for force structure laid out in that testimony and the resourcing levels imbedded in the Army's budget and program, I support the funding levels as submitted. I do that at the risk of compromising my credibility for independent analysis. However, the Goldwater-Nichols legislation works just as well for planning and programming as it did in the execution of Operation Desert Storm. I and the other CINCs have been fully included by the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, and the Service Chiefs in the development of this defense program. Changes to those documents were made to accommodate FORSCOM concerns. We did not get everything we wanted, but in the final analysis we could not disagree with the decisions that were made during the trade-off analyses and decrement drills.

This command's deepest remaining concerns embrace the cutting of two additional Active component divisions and a substantial reduction of Reserve component force structure over last year's submission. In our collective judgment, these reductions precipitate conditions that increase our capability risk from low to moderate given our multiple missions and varied threats. I do not like these cuts; however, given the critical alternatives required to save this structure, we find the reductions the lesser of other evils.

As a Joint Commander, I could not advocate further cuts in the sister service budgets to assist in the structure "buy back" process. This is particularly true in light of our strong recommendation to increase funding for strategic airlift, sealift, target acquisition and communications. To buy back the structure from the Army's R&D or procurement accounts would be equally dangerous. In peacetime and during periods of cost constraints and smaller forces, technology is one of our biggest readiness multipliers. Operation Desert Storm validates the need for continued modernization and the pursuit of Armor Systems Modernization, the Light Helicopter, the Army Tactical Missile System (ATACMS) and the Anti-Armor Weapon System-Medium (AAWS-M), among the others in the R&D and procurement programs presented to the committee. The Army has already been forced to cut very deeply in R&D and procurement; it would be inimical to FORSCOM's capability to execute its missions if it were cut any deeper. The Army's modernization efforts are geared toward shifting to support a contingency oriented Forces Command and are no longer focused primarily on thee Soviet threat.

Our major construction accounts have already been cut to the bone, and there is absolutely no leverage for savings there. To buy back structure through trade-offs in the OMA accounts would be equally pernicious. Our backlog of maintenance on our facilities is dangerously high and training simply must be our highest priority given the short-fused nature of the emerging contingency environment laid out by the Secretary of Defense and the Chairman of the Joint Chiefs of Staff. We must maintain an effective OPTEMPO/flying hour program and fully fund combat training center initiatives. The Iraqi Armed Forces debacle is a perfect example of what happens when you have good servicemen and good technology but inadequate training and wherewithal to care for those servicemen.

Given R&D, procurement, MCA and OMA trade-offs are impractical for Total Force structure buy-back, these same considerations even limit our ability to preserve Reserve component structure. The only budget area that could be used to maintain Reserve structure at current levels is the Active component personnel account. This would require the Army to reduce its Active component divisions far below the 12 proposed, clearly compromising FORSCOM's capability to successfully execute the new military strategy while retaining a capability for expansion.

Forces Command has already been decremented two Active divisions. Although force correlation and loss exchange analyses indicate that this is marginally acceptable, to further decrement Active divisions to buy back Reserve structure would clearly place our capability to execute our missions at very high risk. In fact, given these analyses and insights gained from the current Mideast crisis, if the committee were able to reconstitute our demobilizing divisions without decrementing other Defense Department budget and program items, the Forces Command could reduce the risk in its mission capability.

Some of the most unsettling and sensitive cuts were those associated with the Reserve component structure. These magnificent soldiers are also among the most patriotic and professional in our Army. Operation Desert Storm has shown us that the Reserves play a significant role during robust regional contingencies, and they play critically important roles as a hedge against general war. This is particularly pertinent in that budget deficits and other national priorities continue to shrink the Active component force structure, leading to even greater reliance on our Reserve and Guard soldiers. Furthermore, they are major players in the key asset protection program, and military support to civilian authorities during disaster and ecological relief operations. They also have a significant role in fighting the war on drugs.

The proper mix of Active and Reserve component forces and the proper balance of combat and support missions have been the crux of deliberations between Forces Command, Department of Army, the Joint Staff, other CINCs, and the Office of the Secretary of Defense since I assumed command in September 1989. I know there has been some despair that this discussion will fall prey to some sort of negotiation process—a "share the pain" approach. That would not be a sound strategy, and that is not how the Secretary of Defense, the Chairman of the Joint Chiefs, the Chief of Staff of the Army, or Forces Command are shaping the future AC–RC mix.

After many months of study and analysis, we now know more about the AC–RC mix equation than at any previous time. Through wargaming and experiential analysis, we can reasonably estimate what forces are needed and when. In addition, an invaluable array of empirical data is now available from our Operation Desert Storm experience.

Our structure analysis at FORSCOM, executed exclusive of the Defense and Army Departments, corroborates their findings and the fiscal recommendations that they have submitted to this committee. We have made the basic assumption that because of domestic budget deficits, balance of payments problems, and nondefense priorities, all the forces that can be Reserve component should be Reserve component. The Forces Command analysis is underpinned by the short-fused robust contingency and general war reinforcing threats laid out in the Secretary of Defense's testimony. The contributions of joint sister service forces and combined allied forces available to Forces Command to execute missions associated with those threats were considered as well. Additionally, emerging results from independent studies indicate that we are in the ballpark.

Gaming methodology coupled with empirical data determine how many of what type units are required when. When they are required is important because the more time available, the more likely you can use Reserve component units. In addition, the less time Reserve component units require for pre-employment preparations the more likely you can use Reserve component units. Our own analysis of existing gaming, empirical data and observations from Operation Desert Storm indicate that during robust contingency operations, Active component forces will be required during rapid deployment force lodgement operations to seize and protect airfields and seaports for follow-on forces. These forces, to include combat and support units, must be Active component because they must depart on the first day of the crisis.

These forces represent strategic deterrence and lodgement forces. Analysis indicates that it is essential to have an immediate follow-on force to augment them. The role of this second force is to stabilize the crisis situation. While we will probably not be able to resolve the crisis with this follow-on force, it can ensure that we will not lose—that we do not experience a series of tactical emergencies from which we cannot recover. These stabilizing forces must be heavier units, which means a greater reliance on sealift, and must arrive within the first 30 days. The combat elements of this force again must be Active component because they are trained and ready to meet deployment time requirements. But there are critical, substantial roles to be played by Reserve component support elements—the logistical backbone of Operation Desert Storm.

In order to resolve the crisis, other sustaining reinforcing forces would be required to restore lost terrain and/or defeat enemy forces. These forces can take longer to deploy—and given an adequate level of premobilization readiness and post-mobilization training time—can include not only RC support troops but also Reserve component combat forces. The National Guard roundout units, accordingly, still have utility.

To this robust contingency scenario we must add the Army's requirements for a forward global presence as well as the potential need for FORSCOM to reinforce those forward forces as a general war hedge.

While dealing with a regional conflict we must simultaneously maintain a sufficiently sized and ready strategic reserve force to deter and, if necessary, react to any attempt to take advantage of our commitment to the ongoing conflict. Given prompt reaction, strategic reserve forces can be predominantly task organized from the Reserve components.

You will have noted that the factor of time dominated my description of strategic structure requirements. This time dimension—the "when"—is absolutely critical in determining the AC-RC mix. It is increasingly important for reserve forces to be fully ready at the time required. These times will be more demanding than those of Operation Desert Storm. Potential adversaries will not repeat the mistake of Saddam Hussein. They will attempt to take advantage of the time provided during our deployment to take quick, aggressive action before we are able to focus our full military capabilities. Our challenge is to reduce this enemy window of opportunity.

Reserve component forces programmed into the early deploying force must be units we can maintain at highly manned, equipped and trained levels. These generally have uncomplicated unit functions even though individual skills may be complex. They include units with civilian equivalency such as transportation, supply, maintenance and medical, as well as equipment-oriented, unitary task specialties that can be accommodated during weekend training such as artillery, air defense, aviation and noncombat engineers.

Increasingly higher proportions of Reserve component units can be programmed into later deploying forces, commensurate with deployment time and post-mobilization training requirements. Units with maneuver skills such as cavalry, infantry, combat engineer and armor and those that include complex synchronization skills at battalion level and higher have proven to have the highest post-mobilization training requirements due to the complexity of their tasks and difficulty in training those tasks during their weekend drill periods.

Because maneuver arms roundout units were not deployed during this latest crisis, concern was expressed in some circles that the capabilities of these units were not appreciated or that the concept only had application for general war reinforcing missions and was not relevant to contingency requirements. These concerns frequently do not recognize the unforgiving, lethal nature of the modern battlefield and the roles, missions and post-mobilization training time associated with the contingency. The capabilities of these soldiers are constrained only by their limited weekend and annual 2-week maneuver training opportunities and the time-consuming nature of combined arms synchronization training that is required prior to deployment

Infantry, armor and cavalry training at company level and higher integrate not only maneuver skills but those of Army aviation and Air Force lift and fire support, artillery, air defense artillery, engineer, signal, military intelligence, maintenance, supply, transportation, medical, military police, chemical, and a host of others. The tasks and standards associated with these synchronization skills change at all levels as battlefield conditions change. Execution of them is more an art than a science. They take considerable time and effort to master.

Because there is insufficient time to train these skills prior to mobilization, the roundout brigades cannot be deployed during the initial phases of contingency operations. However, the enormous progress that our National Guard roundout units made during the past 3 months training at Fort Hood and the National Training Center is a reflection of their intrinsic professional competence, commitment and internal fortitude, and testimony of roundout units' utility for later deployment with our early reinforcing active divisions in contingency operations. Some substantive changes will have to be made, but the concept has merit for our later deploying units.

As we examine which elements of our Total Force are suitable for the Active versus the Reserve component, we are not merely considering the current state of the force—what *is*—but also the potential state of the force—what *can be*. There are many readiness enhancements that can reduce the time required to prepare and, therefore, improve the utility and adjust the structure of the Reserve components.

The key to Reserve component utility in the contemporary national security environment is timely deployment and performance to high standards in a lethal environment. Programs to enhance readiness levels include improving the quality and relative quantity of full time support, harnessing multiple technologies to include simulation to increase the amount of relevant training possible at weekend training locations, making annual training more realistic and demanding based on mission essential tasks, reducing training detractors and decreasing personnel turbulence. We are developing the details of these programs to include cost effectiveness analyses. We are not excluding the possibility that major changes may be required.

Again, we reemphasize our concern with the proposed cuts in Reserve structure; however, based on the considerations previously delineated, we find we have no other course. The trade-offs to buy back the structure are too painful. The proposed Reserve cuts are not, as some presume, based on a "share the pain" approach, vis-a-vis Army Active component structure cuts.

Our Army truly represents an integrated total force of National Guard, Army Reserve and Active component units analogous to a barber pole. If 25 percent of the pole is truncated, regardless of the angle of incidence, National Guard, Army Reserve and Active component units will be severed in approximately equal numbers. When an Active component division is cut, it makes sense to cut the National Guard and Army Reserve noncombat units that support it. In these complex, uncertain and cost-constrained times, it does not make sense to protect echelons above division and echelons above corps support elements when the combat forces they support have been taken out of the structure; nor does it make sense to protect late deploying combat units that are out of synchronization with strategic requirements.

A balanced force is required for the new environment. Units that perform anachronistic roles against changing world and battlefield conditions have little, if any, utility. Furthermore, it is difficult to justify units that over time have become compromised demographically or those whose low personnel fill and limited training opportunities mitigate against the timely deployment consistent with current contingency requirements. Personnel, funds, equipment and other resources from such units should be shifted to increase the robustness of retained priority reserve structure.

Despite these shortcomings, many of these important, but lower priority, units continue to be valuable because of their utility as a general war hedge and for their support of many State and Continental U.S. military missions. Furthermore, they represent a vital part of the citizen soldier ethos that constitutes our national security linkage to Americans in hundreds of towns and cities throughout the United States. We can improve their readiness through reorganization, realignment and better training programs. However, they must be paid for, and given fiscal realities, I cannot justify recommendations for cuts in the proposed Army or sister service budgets or programs to do that; this would unduly compromise our strategic and tactical capabilities. If this committee can find ways to pay for these units and the full support they require, without decrementing our other balanced defense programs, it clearly would be money well spent.

Any consideration of a balanced force is incomplete without consideration of strategic lift. The ability to project power rapidly must be guaranteed. As forward deployed forces are reduced to reflect the changing environment, the heart of our conventional deterrence and crisis response rests with Continental U.S.-based contingency forces. Such a structure must allow us to project strategic land forces directly and rapidly from the Continental U.S. into areas of vital interest, in the configuration required, and without the added time associated with transfers and multiple enroute staging/transfer bases. Operations Urgent Fury (Grenada, 1983), Just Cause (Panama, 1989) and now Desert Shield/Storm have all manifested the need to respond to short-fused crises by the immediate deployment of ground troops. This latest Mideast crisis illustrates that the deployment of heavy forces are as important, if not more important, than the deployment of light forces. Currently available airlift and sealift have been severely taxed in Operation Desert Storm and we have had to rely on foreign vessels for a significant portion of our sealift. I must salute the absolutely magnificent job General Johnson and TRANSCOM did in deploying our forces to the Gulf given the assets available. We are currently on the margin in responding to short-notice robust contingencies, a margin that will evolve into a major deficiency in the next 5 years if sea and airlift capabilities do not improve substantially.

As indicated earlier during the AC–RC mix discussion, gaming and empirical analyses reveal that in our highest risk contingency scenarios such as the current Mideast crisis, a critical arbiter of battle success is the rapidity at which forces can be introduced into the area of operations. At a bare minimum, sufficient rapid deployment forces must be introduced immediately by air to secure aerial and sea ports for use by follow-on forces. Also immediately, sufficient heavy forces must embark by sea to arrive within the first 3 weeks to operate in conjunction with prepositioned heavy forces to stabilize the situation. If these forces arrive too late, or in insufficient numbers, so many tactical emergencies develop that, regardless of the number of follow-on reinforcing forces arriving later, we will lose the war. Getting there "firstest with the mostest" is a concept that still has contemporary relevance.

Emerging insights from Operation Desert Storm seem to me to indicate that, given contributions by self-deploying sister service air forces and prepositioned land forces, sufficient airlift for a light corps of two plus divisions is a requirement. Sufficient sealift for two heavy divisions and the remainder of an air assault division already partially deployed by air is also required.

Once these units stabilize the situation, other forces required to win can be introduced at a more measured pace by the later deploying reserve fleets. Importantly however, conflict termination and casualty rates are not linear functions of force introduction rates. If the total force can arrive 2 weeks earlier, the conflict could conceivably be terminated 2 months earlier with one-half the casualty rate.

DOD is conducting a Mobility Requirements Study (MRS) which will quantify our strategic lift needs for the next decade. We need to wait for the results of that study to establish our precise requirements. The Defense budget and program has been surgically developed and exploits joint force battle effects synergisms. It should not be changed. However, if the committee and the Congress can find the way to plus up the air and sealift programs without changing the proposed defense program, we anticipate that future conflicts can be terminated more quickly and with significantly less loss of life.

The C–17 program is strongly supported by the Army and FORSCOM because of its large volume, oversized equipment, long distance, and unimproved airfield characteristics. An aircraft with these capabilities will also allow a reduction in the logistics infrastructure while meeting our strategic and tactical needs. The C–17 has access to three times the number of airfields worldwide compared to our current air fleet. It is more cost effective than our current aging fleet, intratheater throughput capability would be significantly increased, and less congestion of aircraft on forward airfields would be experienced.

Analysis of the Desert Shield operation shows that the C–17, replacing the C–141, could have delivered 50 percent more combat forces to the theater in the critical first 12 days of the crisis when risk was highest. With the C–17, the amount of cargo delivered in the first 45 days could have been delivered in 34 days. Once again, the more combat forces you can deliver during the early days of a crisis reduces risk and casualties and increases opportunities for success.

The capabilities of the C–17 become even more vital to the Army in areas where there are limited to non-existent usable road networks to support forward deployed forces, a situation endemic to many potential contingency areas. As our troops moved from rear assembly areas and positioned for Operation Desert Storm, we could have flown critical supplies directly into forward staging areas, bypassing the congested Dhahran rear area. This would have saved precious time and manpower transloading onto C–130s or trucking over long hazardous overland resupply routes already clogged with traffic.

The structure and mobility issues I have discussed here are totally supportive of the new national military strategy outlined by the President in August and expanded upon by the Secretary of Defense and the Chairman of the Joint Chiefs of Staff in hearings before this committee. With the threat of global war less likely in the planning period, we must focus on regional contingencies. The most important lessons we should learn from the situation in the Persian Gulf is that the crisis did indeed occur—it was not a planning scenario—and that the socio-economic and political forces which precipitated it will continue to exist in other parts of the world for many decades. Irredentism in Central Europe and the Middle East is an obvious precipitant of potential conflict in the near term, but other complex forces are lurking in the background in other parts of the world that, with prevailing uncertain conditions, could cause short-fused conflict as well.

Political-military multi-polarity will prevent the deterrence of many of these conflicts and economic interdependence will preclude our isolation from them. Our budget deficits and new defense priorities will mitigate against maintaining an Active component force sufficiently large and modern enough to deal with many of the potentially major regional conflicts associated with the burgeoning populations of lesser developed countries and the wholesale migration of high technology weaponry to crisis areas.

For these reasons, our Reserves must play an increasingly important role in our strategy for the future. However, that role cannot be executed by standing pat with current structure and readiness postures and, in so doing, destabilizing active structure and other reserve and active duty readiness underpinnings. We must have a proper balance between active and reserve structures, research and development, procurement, infrastructure and training programs. These are the programs that the Chief of Staff of the Army, Chairman of the Joint Chiefs of Staff, and the Secretary of Defense have put together with my assistance. I am confident that through a cooperative process with the Congress and the American people, we will strike the proper programmatic balance for which we are all looking.

I do ask, however, that we not do so at the expense of our soldiers, civilians and families. When our soldiers come home from Desert Storm, or from wherever they serve to protect America, we must ensure that they come home to a post, to a home they can be proud of. We must ensure that they come home to a family we are in a position to take care of. Soldiers, civilians and families have proven their loyalty, quality and dedication; we have a responsibility to take care of them as we draw down. If we take the force down too quickly and fracture it, we will cause great personal pain to those who have served us so well. Personnel reductions must be made; however, they must be made in a deliberate fashion to preclude unnecessarily severe reductions-in-force, forced early retirements, and other actions which reduce readiness and compromise us as a grateful nation. Our people are the critical difference—and our greatest asset.

Thank you for this opportunity to appear before the committee. I welcome your questions.

Chairman NUNN. Thank you, General Burba. After we hear from all of our witnesses, we will come back to all of you with our questions. General Stiner, we welcome you back again and we thank you for being here. Please proceed.

STATEMENT OF GEN. CARL STINER, USA, COMMANDER IN CHIEF, U.S. SPECIAL OPERATIONS COMMAND

General STINER. Thank you very much, Mr. Chairman and distinguished members of this committee. I am very honored and proud to be here this afternoon. I, too, have submitted a statement for the record.

I would like to take just a few moments, however, to discuss the strategic importance of our Special Operations Forces as a vital instrument of U.S. national policy as we face the future threats in a rapidly changing world.

I want to thank you for your support of our Special Operations Forces, and thanks to your wisdom and your support, I am pleased to report that our country's Special Operations Forces, which are comprised of Special Operations, Psychological Operations, and Civil Affairs Forces from the Army, the Navy, and the Air Force, are in the best shape ever and remain ready today.

We have fought two wars in the past 14 months, where the world has seen Special Operations Forces operating in conjunction with conventional forces in combat operations to bring about quick and credible victories for the United States. Over 4,000 Special Operations Forces were committed in Panama in Operation Just Cause, and over 9,000 have been involved in Operations Desert Shield and Desert Storm. Many will stay there, playing a vital role helping Kuwait get back on its feet. Meanwhile, our counter-terrorist forces have been, and are still, postured to deal with the terrorist threat that was predicted to erupt.

In addition to these commitments, an average of more than 900 Special Operations Forces are committed daily around the world to foreign internal defense activities, assisting friendly host nation governments with the problems that threaten their existence, and committed as instruments of our own national policy. Today, these 900 just happen to be in 27 countries in every region of the world. They will be there or in some other country of need on Easter, on Independence Day, and at this time next year, doing things in furthering U.S. interests that conventional forces are not designed to do: dealing with problems that threaten human dignity, that cause friendly governments to fall, and which, if left unattended, could involve the United States in contingency operations.

GEOPOLITICAL ENVIRONMENT

As we look to the future, we recognize that the threat has changed somewhat. The likelihood of a global war or a nuclear war is probably less than it has been in the last 40 years. Although the threat that we will most likely face in the future has changed somewhat from bipolar to multipolar, little has been done to relieve the complex situations that give rise to the problems in the Third World. Socio-economic decline, the spread of religious fundamentalism, political instability, the spread of poverty and disease, and resource shortages are ever present in these countries. And also, there are the factional issues, the have's and the have not's, narco trafficking and terrorism, which is an international dilemma that respects no boundaries and no governments, and, of course, the proliferation of weapons of mass destruction. These problems could challenge the United States in the future like it has never been challenged before: from an economic standpoint, from a prestige standpoint, from a resolve standpoint, and in terms of our credibility as a world leader. Therefore, the United States must focus on early detection of potential crises and seek peaceful solutions through appropriately tailored foreign internal defense programs, yet, at the same time, maintain the capability to respond if peaceful solutions fail.

USSOCOM'S ROLE IN THE NATIONAL SECURITY STRATEGY

Our Special Operations Forces constitute a low cost but exceptionally effective force for dealing with these problems. They are all highly trained and experienced, all hand-picked officers and non-commissioned officers. They are language trained and culturally oriented toward a specific area or region of the world. They are effective across the full operational continuum of conflict. They are experts in foreign internal defense needs, to include nation-building. They are acceptable politically where higher visibility conventional forces are not. And they are ideally suited for forward employment in those geopolitical environments where help is needed the most.

The United States Special Operations Command has two paramount priorities: first, to maximize the readiness of the forces that we have been entrusted with to the absolute 'Nth degree possible in order to accomplish whatever our country may ask us to do in the foreseeable future; and, second, in support of the regional Commanders in Chief, to forward employ these forces to the maximum extent possible in support of their regional foreign internal defense programs. It's like having the best car in the world. It does not do you any good if you leave it in the garage and do not drive it.

USSOCOM BUDGET

Now let me say a word about the United States Special Operations Command's portion of the President's budget. Everything in our budget is essential for maintaining the readiness and the edge that our forces require for doing what we expect them to do, no more and no less. We are asking for only 1 percent of the total Department of Defense budget: a very small part for the contributions that our forces make.

In summary, I would like to conclude by saying that our Special Operations Forces provide Congress, the National Command Authority, and the Theater Commanders in Chief with the capability and the latitude of options for best dealing with the challenges that we are most likely to face from the Third World in the future, ranging from specialized peacetime operations to equally specialized conflict support of combat operations.

They represent our nation's finest and most capable forces. You don't read much about them in the paper and you don't often see their faces on TV because they do not seek notoriety nor do they seek glory for themselves. Yet, they do not hesitate to lay it on the line for their country. In fact, in the last 14 months, 17 have given their lives in combat, 14 are still missing in action, and 100 more have shed their blood—all for the price of freedom—proportionately more than any other forces of any service.

Mr. Chairman, once again I appreciate this opportunity to appear before this committee and to present my views. I ask your continued support and the support of this committee for our Special Operations Forces, and they will continue, be assured, to give you and our country their best. Thank you very much.

[The prepared statement of General Stiner follows:]

PREPARED STATEMENT BY GEN. CARL W. STINER, USA, COMMANDER IN CHIEF, U.S. SPECIAL OPERATIONS COMMAND

Mr. Chairman and distinguished members of the committee, I appreciate this opportunity to appear before you to discuss the strategic employment of Special Operations Forces—a capability of increasing importance in our rapidly changing world.

As Commander in Chief, U.S. Special Operations Command (USSOCOM), I have global responsibility for providing combat ready Army, Navy, and Air Force Special Operations Forces (SOF) to the five warfighting CINCs who are directly responsible for furthering our Nation's security interests throughout the world. In addition, when directed by the President or the Secretary of Defense, I am responsible for planning and conducting selected special operations.

I am pleased to report that our country's Special Operations Forces remain ready; our strategic capabilities across the operational continuum have been demonstrated daily during the past year. During fiscal year 1990 alone, USSOCOM deployed 485 training teams to 35 different countries around the world. Many of these deployments for training provided a significant and needed presence in areas where no permanent U.S. military forces are stationed.

Today, in addition to the Special Operations Forces that are employed in support of Operation Desert Storm, USSOCOM has forces employed in 24 different countries in every region of the world. These soldiers, sailors and airmen are quiet, professional instruments of U.S. policy. They are forward employed, performing their respective missions every day of the year, from the grass roots level—where the problems are—to the Ambassadorial level, giving advice and assistance and coordinating requirements, all for carrying out the interests of the United States.

For example, USSOCOMs Special Operations, Psychological Operations and Civil Affairs Forces are providing assistance and training to host nation forces and officials by building school houses, training doctors and medical officials in disease prevention and child health care, supporting our Nation's fight to combat the scourge of drugs, and assisting in host nation foreign internal defense activities through military to military training programs.

Our Special Operations Forces are ideally suited for support of the national security strategy outlined by Secretary Cheney and General Powell on 7 February and play a vital role as an instrument of American foreign policy. Your recognition that Special Operations Forces represent tremendous capability at a relatively low cost and your continued support have helped improve our posture significantly.

THE GEOPOLITICAL ENVIRONMENT

In concert with other elements of U.S. strategy, SOF can and should be an effective instrument for achieving U.S. objectives around the world. Special Operations Forces have an essential role to play in responding to the emerging national security challenges which will confront the United States into the next century.

The warming of relations between the United States and the Soviet Union should permit us to focus our attention on the complex conditions that continue to cause problems in Third World, underdeveloped countries. The euphoria induced by improved relations with the Soviet Union and the accompanying reduced risk of nuclear warfare should not obscure our view of the following realities:

— There are now many more significant players on the gameboard of international politics than ever before. New combinations of power are developing. Old international patterns have crumbled.

— There is increased global interdependence in economic, environmental, political, and information issues.

— The problems of rising political and economic expectations are even more pronounced among Third World countries now that Soviet power is more diffuse.

— The Third World has fragmented, and should no longer be referred to as a unitary entity. There are considerable differences among the poor countries of Asia, the debt-laden nations of Latin America, and the oft-forgotten continent, Africa. No universal solution is valid for the problems of such different countries.

All of these factors make the issue of strategic balance far more dynamic than it has been for more than 40 years.

In addition, little has been done to relieve the complex and deplorable conditions that contribute to many of the problems in the Third World.

— Socioeconomic decline, the spread of religious fanaticism, political instability and resource shortages are ever present.

— Narco-trafficking continues to be an international dilemma that recognizes no borders and respects no government.

— Increasingly, drug cartels are joining in mutual support with Third World insurgent and terrorist groups to further destabilize Third World governments.

— Acts of terrorism, insurgency, and subversion reflect the instability created with increasing nationalism and religious fanaticism.

— The proliferation of powerful weapons of mass destruction and great lethality continues. As the Gulf crisis has revealed, these weapons are now in the arsenals of some Third World countries.

— In every region of the world, one or more states has the potential to attempt to establish regional hegemony. This alone will challenge us for new approaches to solutions for protecting our interests.

Without a countervailing trend to point to, it appears that internal conflict and critical socioeconomic problems in the Third World will continue, at least at their present levels. It is probable that these dilemmas will expand in coming decades, with population growth and environmental degradation adding new pressures on weak economies and unstable political systems. As a consequence, it is certain that the impact of these geopolitical circumstances upon our national interests will compel the United States to engage directly or indirectly in some of these struggles.

From my viewpoint, it is in the Third World countries that problems are going to challenge the United States:

— Our economic well being;

— Our prestige;

— Our resolve; and

—- Our credibility as a world leader.

Therefore, we must focus on the early detection of potential crises and seek peaceful solutions; yet at the same time maintain the capability to respond if peaceful solutions fail.

The United States can best do this by being attentive to opportunities to assist. Because of the importance of the military in most Third World countries, military-to-military relations will continue to provide the United States the best opportunities for providing assistance.

The Department of Defense must be prepared with appropriate forces to meet a wide variety of scenarios. Special Operations Forces constitute a low cost but exceptionally effective force, whose expertise and flexibility are applicable to both conventional and unconventional conflict. At the same time, related areas of specialization, such as Civil Affairs and Psychological Operations, as well as SOF language skills and regional familiarity, enable SOF to make unique contributions toward protecting U.S. interests across the operational continuum. Because of their capabilities, SOF can also foster environments that help relieve the conditions which promote instability in so many Third World countries.

UNITED STATES SPECIAL OPERATIONS COMMAND ORIENTATION

Many of you are familiar with the U.S. Special Operations Command, but for those who may not be, permit me to describe briefly our command.

As a result of the Cohen-Nunn amendment to the 1987 Defense Authorization Act, the United States Special Operations Command was established to unify all Special Operations Forces under one command. As a Unified Command, USSOCOM is charged with organizing, training, and equipping Special Operations Forces, revitalizing SOF, and providing combat-ready Special Operations Forces to the regional CINCs who employ them throughout the world in pursuit of national objectives. Each component, Army, Navy, and Air Force, continually trains in its respective area of expertise and routinely participates in service and joint training exercises to hone fighting skills and promote interoperability among forces.

In addition, USSOCOM is assigned several unique responsibilities. We are charged with developing and acquiring SOF-peculiar equipment and acquiring SOF-peculiar materiel, supplies, and services. Under Major Force Program 11 (MFP 11) we develop the special operations program and budget. This budget authority is unprecedented in that no commander of joint forces has assumed this responsibility before. We are also charged with developing SOF strategy, doctrine, and tactics; training assigned forces; ensuring the interoperability of equipment and forces; and developing SOF courses of instruction. To this end, we are responsible for three centers of military instruction, to include the JFK Special Warfare Center and School at Fort Bragg, North Carolina, the Naval Special Warfare Center at Coronado, California, and our Air Force Special Operations School at Hurlburt Field, Florida. In addition, working with the Air Force, our Air Force fixed wing and helicopter pilots are trained at Kirtland AFB in New Mexico. Finally, USSOCOM is charged with monitoring promotions; assignments, retention, training, and professional military education of all SOF personnel.

To accomplish these missions, USSOCOM comprises a small headquarters staff and four component commands consisting of Active, Reserve and National Guard Forces numbering approximately 38,000 men and women.

The Joint Special Operations Command (JSOC) is a joint headquarters located at Pope AFB, North Carolina. It concentrates on joint special operations tactics and techniques for all of our service components.

The U.S. Army Special Operations Command (USASOC) is composed of five active special forces groups, four reserve component special forces groups, a ranger regiment, and an aviation regiment. In addition, USASOC is responsible for our Active and Reserve Component Psychological Operations and Civil Affairs Forces.

The Naval Special Warfare Command (NAVSPECWARCOM) is based at Coronado, California. It is made up of six active Seal teams and five reserve Seal platoons. In addition, our Naval component has three active special boat units, and four reserve special boat. Two Seal delivery teams are also assigned to NAVSPECWARCOM.

The Air Force Special Operations Command (AFSOC), located at Hurlburt Field, Florida, has 11 active squadrons—the equivalent of three wings. AFSOC also has three reserve squadrons and a special operations tactical group.

For fiscal year 1991, USSOCOM is accomplishing its mission with a funding level of $2.4 billion, which is slightly less than 1 percent of the total DOD budget and approximately 1 percent of the total DOD personnel strength. SOF are low cost, and provide Congress and the National Command authorities an extremely high payback on the investment.

USSOCOM'S ROLE IN THE NATIONAL STRATEGY

As we look to the future and adjust our national strategy to compensate for the changing threat, there are two military capabilities that the United States must maintain. One is to deter and counter violence that may threaten the United States and its interests, no matter the location. The second is our ability to assist in nation building.

USSOCOM's Special Operations, Psychological Operations, and Civil Affairs Forces are flexible strategic assets which provide these dual capabilities. Consequently, I am committed to a program that will allow maximum forward presence of Special Operations Forces to meet U.S. national objectives, and in support of each regional CINCs plans and programs.

The principal implication of this approach is that USSOCOMs assigned forces, as well as the regional CINCs forward employed SOF, must plan, train, organize and resource themselves for commitment to, and involvement in, the environment of low intensity conflict. As operations Just Cause/promote liberty, and Desert Shield/Storm have made clear, SOF have a critical role in mid-to-high intensity conflict as well. But it is clear where the focus must lie. In order to counter the types of violence we are most likely to face, mission emphasis must be on counterterrorism, counternarcotics, surgical direct action, special reconnaissance, foreign internal defense, and psychological operations. Concurrently, the military contribution to nation building must be pursued through security assistance, humanitarian assistance, and civic action.

THE VERSATILITY OF SOF

A valuable attribute of SOF is their ability to conduct missions in three political/military settings: peacetime engagement, crisis response, and regional conflict.

Peacetime engagement. During the period of peacetime engagement, Special Operations Forces are ideally suited to counteract violence and promote nation building. SOF can be employed directly or indirectly to counter terrorism, narcotics trafficking, subversion, or insurgencies, and to aid resistance fighters against repressive regimes consistent with the requirements of U.S. national security objectives.

In addition, SOF are particularly well suited to nation building tasks that require cultural familiarity, linguistic skills, and a long term commitment. Characterized by small flexible organizations with a wide range of specialized skills and area expertise, SOF provide numerous forms of training and assistance to emerging democracies.

With tumultuous events presaging change in much of the world, coordinated nation building programs can advance the interests of the United States while assisting Third World countries.

In most developing countries there are discrete economic, social and security problems which affect both quality of life and a government's ability to function. Helping a country meet the fundamental needs of its populace is the crux of any nation building effort. U.S. participation in such initiatives often works best when it remains inconspicuous—a role for which SOF are particularly well suited.

SOF also participate in the ongoing war against narcotics trafficking. USSOCOM is a supporting CINC in the Department of Defense counternarcotics (CN) effort. As such, it provides personnel and resources to assist U.S. law enforcement agencies, operational support to regional CINCs, and training and assistance to host nation military and law enforcement personnel.

The primary focus of USSOCOMs forces in the counternarcotics effort has been in the USSOUTHCOM area of responsibility and the U.S. southwest border area under FORSCOM/JTF-6. USSOUTHCOM has the highest utilization of SOF in CN with its involvement in the Andean Ridge countries. Additionally, USSOUTHCOM has the most active overt peacetime psychological operations program (OP3) directed at combating narcotrafficking. FORSCOM/JTF-6 has established an effective record for SOF utilization in support of law enforcement agencies.

USSOCOM's fiscal year 1990 contribution to the CN effort in operating days/percent change over the previous year's include:

Type support	*Total days*
Training U.S. law enforcement agencies	233 (+60%)
Training foreign CN forces	1053 (+82%)
Communications support to U.S. Coast Guard	504 (+10%)

This information does not include SOF participation in combined military training/exercises in high narcotrafficking areas.

The counternarcotics training and support missions include airlift and communications support, overt peacetime psychological operations programs, military training, riverine/small boat training, medical training, SIGINT support, and communications equipment loans.

Crisis Response. SOF are also capable of conducting complex crisis response contingency operations on short notice, with great precision. The high state of readiness of our surgical forces permits them to respond to a variety of crises, ranging from personnel recovery missions to support of larger operations.

Region Conflict. At the middle and high end of the conflict continuum, SOF support conventional forces by providing battlefield intelligence, and economy of force capabilities to delay, disrupt, or divert enemy forces through direct action, special reconnaissance, or unconventional warfare. Thus, the close integration of SOF and conventional forces in peacetime training and during conflict situations must remain an essential element of U.S. strategy. Operations Just Cause/promote liberty, and Desert Shield/Storm have significantly demonstrated that when SOF and conventional forces are employed together, our force potential and capability are maximized.

As we look to the future then, USSOCOM has two paramount priorities. First, to take the special operations, psychological operations and Civil Affairs Forces that we have, and through every means possible, ensure their readiness is at the highest possible state. This is necessary in order to be prepared to carry out U.S. national policy.

The second priority is, in coordination with the theater CINCs, to ensure the most effective utilization of SOF as an essential instrument of national policy. SOF must be ready to be forward deployed in problem countries if we are to take advantage of their capabilities—training, advising, and assisting.

There is a three step process to ensure the best use of our Nation's Special Operations Forces.

First, in conjunction with the theater CINCs and in coordination with appropriate organizations in the inter-agency arena, we have to determine which countries we must focus upon.

Second, we must examine each of these countries as part of a regional plan and, in coordination with the theater CINCs, develop foreign internal defense/nation building programs tailored specifically for that country. SOF is a major player in these programs. As demonstrated throughout the world just this past year, SOF provides training and assistance programs through military-to-military contacts, communications and intelligence support, civic action and disaster assistance projects, and medical and engineer support. SOF expertise in psychological operations, when coordinated with the host nation, is used to counter hostile propaganda and disinformation. Such a coordinated information campaign is also used to emphasize what the host government is doing for its people.

After a nation building program is successfully implemented, every effort must be made to turn the program over to host country agencies, complete with the necessary resources. The nation building effort must be "owned" by both the citizens and the institutions of the host country.

In order to make a nation building program work, there must be a coordinated, focused interagency effort. Such a program must also ensure unity of effort by including all programs of the U.S. Government that apply to the region—orchestrated toward common goals and objectives that have been established for a given country.

The third and final step in this SOF forward employment process is to determine those countries in which a shooting situation, such as a hostage situation, a takeover of a U.S. Embassy, or an insurgency is likely to arise. For those countries, we need to start right now establishing the appropriate operational support infrastructure so that if the United States must commit forces at some point in the future, they do not go in unaided and blind.

MODERNIZATION CONSIDERATIONS

USSOCOM recognizes the necessity for a constrained defense budget. Nonetheless, requirements remain for a well-trained, well-equipped, quality force sufficient for protecting U.S. interests.

SOF were latecomers and low priority players in the DOD revitalization efforts of the early and mid-eighties. Now that we have assumed control of our own budget, we must continue to be permitted the opportunity, and provided the resources, to modernize our capabilities with planned, joint and interoperable systems. You are well aware of the type equipment that has been made available in the past to support SOF operations: primarily equipment designed for conventional forces but later modified to support SOF requirements. Today, Special Operations Forces need the resources to develop equipment that meets our validated needs, while continuing to upgrade present systems.

In light of this, it is important to point out that the SOF community, as a result of your significant effort on our behalf, have the capability to begin correcting these deficiencies.

SPECIAL OPERATIONS ACQUISITION ORGANIZATION

On 10 December 1990, the Deputy Secretary of Defense approved USSOCOMs acquisition organization and operating procedures. We are now moving to establish an effective SOF acquisition system. Our intent is to fully and effectively assume the acquisition responsibilities mandated by Congress and the Department of Defense as quickly as possible.

In compliance with congressional direction, we established our special operations research, development, and acquisition center (SORDAC) outside of the National Capital Region and located it in Tampa, Florida. This location ensures that the SORDAC can interface efficiently with all USSOCOM staff elements. The Tampa location will also facilitate better coordination between me, as the special operations acquisition executive, and the many research, development, and acquisition programs USSOCOM is responsible for, now and in the future.

The SORDAC will be directed by a senior executive service civilian. This individual will provide the critical program monitoring, program management, and technical support functions necessary for effective management of acquisition authority and responsibilities.

Our authority from Congress is not only to validate and prioritize SOF requirements, but also to develop and acquire SOF-peculiar equipment and materiel, supplies, and services. We will ensure that SOF are adequately equipped to perform the full range of required missions and to take the lead in research, development, acquisition, and testing of SOF-unique materiel.

Restricted funding for civilian personnel allowed for only two-thirds of the strength validated and authorized by the Joint Staff. In addition, decisions that deleted funds for SOF technology base initiatives effectively shut USSOCOM out of front end research and development. Remaining at the leading edge of technology is important to the future modernization of SOF and is consistent with the research and development strategy outlined by both Secretary Cheney and General Powell in their 7 February testimony.

For now, our primary focus will continue to be on monitoring service-executed SOF programs and we are limited to direct management of low density developmental items. In this regard, the SORDAC has played an important role in equipping our Special Operations Forces in Desert Storm. We will continue our efforts to establish a strong technology base staff in an attempt to leverage service and national research programs.

The ongoing development of the SORDAC does not mean that we have not been making progress in rapidly developing and implementing some much needed capabilities. Our research and development efforts for improving the survivability of employed SOF teams by providing them with a low probability of interception/detection communications capability, the joint advanced special operations radio system (JASORS), is progressing satisfactorily. Our plan is to ensure that JASORS is interoperable with all echelons of command and the theater CINC command, control, and communications (C^3) system.

The Special Operations Command research, analysis, and threat evaluation system (SOCRATES) is a real success story. SOCRATES encompasses the total intelligence support needs for SOF mission activities to include computers, communications, and map and imagery handling equipment. This capability now exists at all USSOCOM component commands and many subordinate commands. We have also been sharing these capabilities with Central Command in support of their Desert Storm requirements. As a result, our SOF and conventional forces in Southwest Asia have unprecedented access to intelligence information.

AIR AND SEA MOBILITY PLATFORMS

The most important modernization concern for the 1990s is for improved SOF mobility systems. SOF must have the operational capability to infiltrate and exfiltrate forces into and out of denied areas. This is a fundamental requirement.

There exists today neither a long range SOF air exfiltration system nor a near term program to acquire one. The lack of this capability presents a severe shortfall to SOF mobility and hinders our capabilities.

Our modernization effort in short and medium range air and maritime infiltration and exfiltration systems continues. This is necessary so Special Operations Forces are capable of going extended distances at night, employing our forces in the mission area, and extracting them before daylight. As previously stated, our efforts are still limited because of the availability of technology. Nonetheless, we are pushing the technical community hard in this regard.

The modernization of our Army special operations aviation helicopter fleet, specifically the 26 MH-47E and 23 MH-60K helicopters, will provide SOF with increased medium range capability for low-level flight in adverse weather, and precision navigation through unfamiliar, mountainous terrain. Both of these helicopter systems are equipped with extended range fuel systems including aerial refueling capability, forward looking infrared system (FLIR) and upgraded engines.

The 24 programmed MC-130H combat Talon II aircraft will dramatically improve our capability to employ SOF. This aircraft is capable of low-level, night, adverse weather penetration of hostile airspace to infiltrate, or resupply SOF engaged in unconventional warfare, counterinsurgency operations, and other directed special operations.

Improved Navy Seal tactical insertion craft and advanced Seal delivery systems are required to build an effective maritime infiltration/exfiltration capability. By modernizing the Seal delivery vehicles (SDV) and swimmer life support systems, the readiness of the SDV platoons will be enhanced by upgrading equipment capabilities to increase speed and capacity for short range missions.

We are also seeking a Seal delivery system in the long term that provides for increased range and speed, and which protects our Seals from extreme cold water conditions. All of this equates to improved probability of mission success, as the Seals will be more capable at the target site. In addition, such a Seal delivery system will enhance the survivability of the delivery system's host ship.

We are making progress with our patrol boat, coastal (PBC) program in order to replace the aging MKIII patrol boats that served our country so well during operation Earnest Will in the Persian Gulf. This patrol boat is an ideal craft for "Earnest Will" type scenarios and for long range coastal patrol interdiction missions required in the SOUTHCOM area of responsibility. The first craft is scheduled to be delivered in October of this year.

The AC-130U gunship will greatly enhance our capability for supporting SOF committed to contingency operations. The current active AC-130H models will transfer to the reserves when replaced by the 12 U-Model gunships that are in our program. The AC-130U will be the best gunship in the world in terms of navigation, target acquisition, adverse weather capabilities, and accuracy and lethality of fires. An additional benefit of the gunship system is its greater stand-off capability and its ability to minimize collateral damage with its pinpoint firing accuracy; the performance of the gunship during operation Just Cause demonstrated its utility time and time again.

STRATEGIC MOBILITY

Another important aspect of SOF capability is strategic mobility. Strategic airlift is crucial to project our forces worldwide. This has been demonstrated again by Operation Desert Shield/Storm.

The United States does not have enough strategic airlift. This will become more apparent as forward deployed force levels are reduced. The heart of our conventional deterrence and response capability will rest with CONUS-based forces. For this force to be credible, a robust strategic mobility capability is essential.

For our part, USSOCOM has the aircraft available for quick response to crisis situations. However, if a larger contingency occurs, delays in response can be expected for rounding up the aircraft to move the necessary forces to successfully accomplish the mission in a timely fashion. When rapid reinforcement and timely arrival of supplies are absolutely necessary, there is no substitute for readily available airlift support.

FORCE STRUCTURE

It is essential to maintain and strengthen U.S. Special Operations Forces in order to best support U.S. interests in the current geopolitical environment. Successful peacetime engagement and conventional deterrence will require highly trained, motivated, and well equipped mobile forces with the facilities and logistics to train and sustain operations.

To this end, the 3rd Special Forces Group is well on the way to becoming a reality, with the establishment of the group's headquarters and the activation of one battalion this past year. The remaining two battalions are scheduled for activation by fiscal year 1993. However, recognizing world events as they are, we are working to bring them on board earlier. The addition of the 3rd Special Forces Group, with its African orientation, gives SOF the capability to support fully the three most likely areas for low intensity conflict and nation building requirements (Latin America, Pacific Rim, Africa) as well as supporting Europe and Southwest Asia.

We are also building our total number of Seal platoons to 60 by the end of fiscal year 1992. This is necessary in order to meet operational support commitments to the fleets, and meet our peacetime engagement mission responsibilities.

An area that merits concern is our requirement for in-theater logistical support. In the past, we have depended upon the services' logistical support structures to meet the bulk of SOF sustainment requirements. However, as service structures are drawn down, we can expect that forward deployed logistical infrastructures will also be reduced. This will require SOF to deploy its own tailored support and sustainment organization with forward employed Special Operations Forces. Our 528th support battalion is currently manned with approximately 200 people. As we validate our requirements and learn from operation Desert Shield/Storm, we anticipate growing the 528th in order to meet the requirements of forward employed SOF.

RESERVE COMPONENTS

Our Reserve Component Special Operations, Psychological Operations, and Civil Affairs Forces continue to perform exceptionally well. They are important elements in our ability to perform the roles, missions, and capabilities directed by the National Command authorities. On operations Just Cause and promote liberty in Panama, reserve SOF participated in all facets of the campaign and did so magnificently. Reserve SOF are continuing to make significant contributions to Operation Desert Shield/Storm as well.

A proper Active component-Reserve component mix is necessary if USSOCOM is to successfully meet the challenges presented by an increasingly multi-polar world. Reduced warning times, the increased likelihood of conflict, and requirements for short-notice deployable Active component SOF forces with exceptionally high readiness standards necessitates a review of SOF Active component-Reserve component force mix.

JOINT MISSION ANALYSIS

An essential element of future SOF modernization decisions is the USSOCOM joint mission analysis (JMA). The JMA is a major initiative undertaken in coordination with the services, theater CINCs, and national agencies to analyze theater and national mission area requirements for Special Operations, Psychological Operations, and Civil Affairs Forces. In order to conduct this project, we have staffed the JMA from in-house assets, spanning every staff directorate of the USSOCOM headquarters. In addition, we have contracted an outside, independent agency employing former DOD, State Department, and military officials to review our methodology, our preparations, and our conduct of the JMA to ensure we are on the right track.

The JMA will be completed this summer. As of today, all of the initial theater analyses have been concluded and only the global analysis awaits. As it has developed over the past 2 years, the JMA has matured into a highly useful mechanism for determining worldwide SOF requirements in the post Cold War world of multinational coalitions and regional contingencies.

The JMA is a detailed analysis of joint and unilateral operational concepts, requirements, and capabilities for SOF as they apply to each theater. It identifies deficiencies in planning, force apportionment, doctrine, training, organization, and materiel for Special Operations Forces. In addition, the JMA will provide data to guide future force structure and research and acquisition decisions as they apply to the fiscal year 1994–1998 program objective memorandum (POM). In and of itself, the JMA does not prescribe force or materiel alignment decisions and it is not designed to address conventional force alignment issues.

QUALITY PEOPLE

The forces that we have in all of the services today are the best I have seen in 33 years in the Army. They are smart, motivated, and dedicated for all of the right reasons. The exceptional performance of our men and women in operations Just

Cause and Desert Shield/Storm, as well as the sacrifices they and their families incurred, dictates a moral obligation by our Nation's decisionmakers to take care of their needs. Defense reductions must not be at the expense of readiness or personnel and family support programs.

Personnel reductions will be required as our force structure is adjusted. However, the people who remain in our Armed Forces, both Active and Reserve, must believe that our Nation values their dedicated contribution to national defense.

CONCLUSION

The world will never be free of disagreements between countries. Despite reduced tensions between the United States and the Soviet Union, peace and stability are not at hand in the Third World and will not come from good intentions or wishful thinking.

Today, the United States is the only country in the world that is in a position and has the resources to positively influence the geopolitical environment in order to foster a stable peace and economic progress, and we have an obligation to do so. This will require a visionary, prudent, and patient policy for the Third World with the aim of reducing the conditions which fuel insurgencies and of stopping regional quarrels before they come to war. If that fails, we must then be prepared to contain wars before they spread.

Special Operations Forces provide the National Command authorities and the theater CINCs with the flexibility required to execute options in pursuit of such a policy, ranging from specialized peacetime capabilities to equally specialized wartime support. SOF are a relatively small investment, but they are increasingly useful in the complex environment that lies ahead.

Mr. Chairman, once again I appreciate the opportunity to appear before this committee and present my views.

Chairman NUNN. Thank you, General Stiner. General Johnson.

STATEMENT OF GEN. HANSFORD T. JOHNSON, USAF, COMMANDER IN CHIEF, U.S. TRANSPORTATION COMMAND

General JOHNSON. Mr. Chairman, distinguished Members, I thank you for the opportunity to represent the U.S. Transportation Command and the men and women of our command and its components, the Military Airlift Command (MAC), the Military Sealift Command (MSC), and the Military Traffic Management Command (MTMC). These men and women are responsible for the most incredible military deployment in history. Never has a nation moved so much so far and so fast. I have submitted many details in my statement, so I will only summarize some of the highlights for you now.

Support of Operation Desert Shield and Operation Desert Storm was a team effort of America's defense transportation community. This team is composed of Active duty, Reserve and Guard personnel, civilian government employees, the merchant marine, the unions, along with the air, sea, port, rail, and trucking industries. All of these have leaned forward in a unified, coordinated effort. I would like to begin by briefly describing some of their accomplishments.

We little noticed the commercial land transportation sector when they used more than 14,000 rail cars and 23,000 trucks to move General Burba's forces and other U.S. forces around the country. For example, in one 5-day period, 1,174 trucks from 27 different companies moved the 101st Airborne from Fort Campbell, Kentucky, to the Jacksonville Port, at Florida to be loaded out to go to Southwest Asia.

The ports have been very active. The Military Traffic Management Command, both Active and Reserve units, along with the assistance of all the unions, has done a Herculean job of loading our ships. They have loaded a total number of ships equal in square footage to 595 football fields. Most of these ships were the roll-on/roll-off types, and we measure their capacity in square feet.

MTMC has also managed the passenger and cargo flow to both our aerial and sea ports, where they were also key in ensuring that our troops connected with their equipment on the ships as they arrived in the Persian Gulf.

Sealift, as we expected, carried the bulk of the tonnage, nearly 90 percent. On December 30, 1990, we literally had a steel bridge of 176 ships on the ocean, equal to having a ship every 50 miles from Savannah, Georgia, to Ad Dammam in the Persian Gulf.

The maritime labor unions are a very patriotic group, and they played a key role in manning our ships. Our Afloat Prepositioned Ships (APS) and our Maritime Prepositioned Ships (MPS), which have been so well-supported by this committee over the years, were highly valuable, particularly when considering the limited equipment forward deployed in the theater.

Airlift provided the early deterrence in August and September. They were the first to arrive with the air mobile units, which were deployed using our Reserve forces from the very first day. So the Reserves played an equal role with the Active forces.

We also activated our Civil Reserve Air Fleet (CRAF) for the first time. We activated Stage One of the CRAF on August 18, 1990. We had need for more passenger aircraft at that time, but it was still in the height of tourist season. So we only activated Stage One to ensure we could move the troops to close on the ships. On January 17, we had need for more cargo aircraft, so we activated Stage Two. The civil sector has leaned forward and met our every need.

Our strategic airlift effort has been a well-organized system of Active duty, Reserve, Guard, and commercial assets. We have further orchestrated the inter- and intra-theater airlift operations with both the Active and Reserve forces. This method of operating has proven itself over time and works well in wartime, contingencies, or peacetime, as well as in natural disasters.

While the C-17 continues to be the centerpiece for our airlift modernization plans, I am very pleased that the Air Force is going to procure some new aircraft to modernize our C-130 fleet.

While all of the members of America's transportation community should be deservedly proud of this incredible deployment, I must point out that it was not the worst-case scenario. It's true that we had to deploy forces literally half-way around the world, and we had to begin this deployment from a standing start, with little warning. But, on the other hand, there are many factors that were in our favor.

First, we didn't have to fight our way into the Persian Gulf and onto the Arabian Peninsula. We, therefore, suffered no combat losses to strategic transportation assets. We also had unprecedented international cooperation with foreign country overflights and rights of passage. We had access to airports, seaports, fuel, and supplies along the way.

Saudi Arabia had a sophisticated infrastructure of airports and seaports, perhaps the best in the world. They also had a sufficient supply of fuel and water resources. But, most importantly, we had nearly months to deploy this force. If any one of these factors had not been in our favor, it would have been a much greater transportation challenge. It would be unwise to base future plans on such cooperative and benign environments.

One other factor I must mention is the relationship between the three of us here and General Schwarzkopf in the Central Command. Operation Desert Shield and Operation Desert Storm have clearly demonstrated that we are an integrated force in a joint structure. The present structure allows us, as supporting commands, to respond to General Schwarzkopf's requirement priorities in a coordinated and, I believe, rapid manner. The lines of authority are clearly drawn. The only unexpected element in this conflict was the European Command (EUCOM) functioning as a supporting command. In most of the previous scenarios, they had been the supported command. But they transitioned to this new role very, very well, and a tremendous relationship was developed between us, EUCOM, and, of course, CENTCOM.

Finally, let me say, as the others have, that it is not the planes, trains, ships, and computers that were the heroes. It's our people. Now that their job is finished, I hope that we take care of their important needs also—first, to return them safely home to their loved ones; and, second, to remember the commitment they made to our country, and we to them, in establishing the All Volunteer Force in 1973.

Our transportation job is only half done, however. I hope to begin the second half, redeployment, very shortly. Our support of the 3-day ground war and the 40-day bombardment war will probably end up being a 360 day wartime activity for the transportation community. As always, we are proud to support our Armed Forces in their transportation needs. I thank you, Mr. Chairman.

[The prepared statement of General Johnson follows:]

PREPARED STATEMENT BY GEN. HANSFORD T. JOHNSON, COMMANDER IN CHIEF, U.S. TRANSPORTATION COMMAND

Mr. Chairman and distinguished members of the committee, thank you for this opportunity to appear before you today. I am pleased to represent the men and women of the U.S. Transportation Command (USTRANSCOM) and its component commands: Military Airlift Command (MAC), Military Sealift Command (MSC), and Military Traffic Management Command (MTMC) who, since 7 August 1990, have been involved in a military deployment and sustainment effort of unprecedented scale. Along with an overwhelming response from our National Guard and Reserve forces, the civilian transportation industry, and our allies and friendly foreign governments, we have set a new standard for force projection in Operation Desert Shield/Storm.

During the first 3 weeks of the deployment, USTRANSCOM moved more personnel and equipment to the Persian Gulf than the United States transported during the first 3 months of the Korean war. As of 1 February 1991, our balanced mobility forces enabled us to move 439,553 passengers and approximately 2.4 million tons of unit equipment, 4.2 million tons of refined petroleum products, and just over one-half million tons of sustainment cargo to the Persian Gulf. Today, I will highlight what USTRANSCOM has done to meet its various airlift and sealift responsibilities in support of Desert Shield/Storm, how our current mobility programs have performed in the deployment, and actions required to provide the flexible, versatile transportation system necessary to support the U.S. military force structure in the future and, in response to your request, the status of USTRANSCOM with respect to implementation of the Goldwater-Nichols Act of 1986.

The deployment to the Persian Gulf area seems a "worst case" scenario at first glance. We had to move troops and equipment to a location halfway around the world with little military infrastructure in place. On the other hand, it is crucial to understand that there were many favorable circumstances that contributed to our success in Desert Shield and continues to aid us in support of Desert Storm. We are fortunate to be deploying into some of the most modern and capable airports and seaports in the world today; the host nation support provided by Saudi Arabia has been extremely generous, particularly in food, water, and petroleum products; our lines of communication have been unchallenged by enemy action; and we have enjoyed worldwide support in our efforts. The strategic lift provided by our allies and friends has made a significant contribution to the deployment. The importance of this worldwide support stands in stark contrast to the 1986 Libyan operation, when only a single NATO ally supported our actions.

Most importantly, however, was Saddam Hussein's decision not to continue into Saudi Arabia in early August 1990. Iraqi military inaction from the time of the President's decision to send troops on 7 August 1990 until the United Nations' deadline of 15 January 1991, in essence, provided us with an increased response time of 161 days. It would have been a completely different scenario if we would have had to fight our way onto the Arabian peninsula. In fact, if any of the factors I have mentioned had not been in our favor, our challenge would have been much greater. We could find ourselves in a future contingency that may require us to accomplish a deployment by relying principally on a mix of U.S. mobility forces.

The quickest, most flexible portion of those mobility forces is airlift. The Military Airlift Command (MAC) directs the strategic airlift assets vital for rapid force projection. Our active duty airlift fleet of 70 C-5s, 218 C-141s, and 170 C-130s joins with aircraft from the Air Force Reserve and Air National Guard to make up a total of 109 C-5s, 234 C-141s, and 450 C-130s, not including trainer aircraft. MAC has effectively melded this airlift force, along with available KC-10s, U.S. civilian airliners and foreign cargo aircraft, into an air fleet that has surpassed the effort of any air deployment in history. By the end of 6 weeks of operations, they had logged more than 700 million ton-miles, exceeding that of the 65-week-long Berlin Airlift in 1948. At the height of our current airlift operations, 127 planes landed daily in the desert of Southwest Asia, averaging one arrival every 11 minutes, around the clock. An effort of this magnitude can only be accomplished through an integrated airlift system, capable of comprehending overall transportation needs and applying the total airlift assets most efficiently and effectively. We have seen the proof of this in support of Desert Shield/Storm requirements, where each portion of the airlift fleet has been used to its greatest advantage.

One critical portion of airlift in Desert Shield/Storm is the contribution made by civilian air carriers. Immediately after the deployment began, civilian airlines offered their support and the first civilian mission flew on 8 August 1990. The extent of voluntary cooperation expanded rapidly, but airlift requirements quickly exceeded the combined capabilities of our government-owned and volunteer commercial assets. As a result, I activated (with concurrence by the Secretary of Defense and Chairman of the Joint Chiefs) the Civil Reserve Air Fleet (CRAF) Stage I on 18 August 1990, marking the first time since the inception of CRAF in 1951 that any portion of the program had been activated. This action quickly expanded our civilian airlift fleet to 68: 17 long-range international (LRI) CRAF passenger aircraft, 21 LRI CRAF cargo aircraft, plus 15 passenger and 15 cargo volunteer aircraft, both U.S. and allied. Combining these commercial assets with our government-owned and operated, or "organic" assets, we were able to meet Desert Shield airlift requirements until commencement of Operation Desert Storm, and the start of our heavy sustainment effort.

Although sustainment supplies move primarily by sea, priority shipments go by air. To ensure the capacity to meet our air sustainment requirements, the Secretary of Defense activated CRAF Stage II on 17 January 1991. This made available a total of 77 long-range international (LRI) commercial passenger and 40 LRI cargo aircraft. Throughout this major mobilization effort, our ability to airlift priority cargo has been critical, and the U.S. airline industry has responded accordingly, voluntarily providing an additional 30 cargo aircraft above those required by activation of CRAF Stage II. As a whole, airlift operations under CRAF have been very successful, attesting to a well developed concept begun three decades ago, and we are pleased to have the continued cooperation of the airline industry.

While CRAF has augmented our strategic deployment, or intertheater airlift, C-130s have provided the tactical, or intratheater airlift, in Desert Shield/Storm. The in-theater C-130s, while MAC assets, operate under the direct control of the U.S. Central Command Commander in Chief (USCINCCENT). This is normal practice for theater airlift. Since the beginning of the deployment, the C-130 performance in support of USCINCCENT requirements has been remarkable. Flying 9,124 missions as of 1 February 1991, they have amassed 50,815 flying hours. This force consists of

57 percent active duty and 43 percent Air National Guard and Air Force Reserve aircraft. They make an extremely effective airlift team, handling all intratheater air cargo movements.

The current mix of Active to Guard and Reserve forces has served us well. Active duty forces provide a rapid response capability, while the Guard and Reserves have historically provided the augmenting forces we need to meet large contingency operations. Urgent Fury, Just Cause and now Desert Shield/Storm clearly demonstrate the National Command Authorities' absolute requirement for immediate lift response capability from our active duty forces.

Beside the obvious operational advantages, today, all C-130 units also benefit substantially from having centralized command of their logistical support and training. Our global responsibilities require that our entire airlift fleet be operated and managed from a global perspective, and not from the unique needs of the theater commanders. Our C-130s operating in Southwest Asia today may be deployed to support other theater commanders in the near future, but no matter where they are, they should always remain an integral player on the airlift team. Maintaining this integrity of the theater and strategic fleets is the best means of ensuring support to the unified commanders and individual services. It allows us to use our air mobility forces when and where they are most needed. This is the most efficient way of doing business, and we have demonstrated time and again that it works. By maintaining this fully integrated common user airlift fleet under USTRANSCOM, we will be there to provide the support America can always count on.

All of our airframes are being pushed harder than at any time since Vietnam. From the onset of the deployment, our C-5 and C-141 fleets have been operating at near wartime use rates. Keeping this tremendous flow going required us to defer routine preventative maintenance and cannibalize parts from aircraft undergoing depot level repairs. The operations tempo of our C-5s, currently the only aircraft capable of handling the very large pieces of military equipment we refer to as "outsized," has increased to nearly 3½ times their usual rate. The C-141 has also been pushed to the maximum as its requirements peaked. Already the workhorse airlifter for MAC, our fleet of C-141s flew over 1,000 missions in August in support of Desert Shield, about twice their normal mission rate. By December, they were flying almost 1,400 missions per month—a pace that continued on through January. Although the C-141s are maintaining a high mission capable rate, at the current tempo of operations it only takes 7 months to equal 1 year of programmed service life.

The answer to our rapidly aging C-141 airframes is the C-17. Its modern design gives it the capability to move large quantities of equipment, munitions, fuel, and outsized cargo directly to forward areas. In fact, because of its superior fuel efficiency, the C-17 can carry its maximum payload over a greater distance than either the C-5 or C-141. The C-17 can also airdrop outsize cargo. Its lower manpower requirements and reduced operation and support costs make it more efficient, while its exceptional ground maneuverability increases cargo throughput, adding to its effectiveness.

We estimate that if we would have had the C-17 in place of the C-141 during Desert Shield, we could have met our airlift deployment requirements from 20 percent to 35 percent faster, depending on the capacity of the airfields made available in the area of operations. The C-17's impact in the first 12 days alone would have allowed us to carry enough cargo to deploy an additional three F-15, three F-16, three F-4, and three A-10 squadrons plus two light infantry brigades. In addition to its strategic contribution, the C-17 could also have provided the equivalent in-theater airlift of a 16 aircraft C-130 squadron. To sum it up, the C-17 means fewer intertheater missions, fewer crew members, less maintenance, additional intratheater capability, and a faster rate of cargo delivery.

The amount of heavy combat equipment required is too great to carry exclusively by air, so sealift was also put into motion immediately. Faced with a sealift effort of huge proportions, the Military Sealift Command (MSC) first turned to our 25 ships in the Afloat Prepositioning Force (APF). Making up this force are the 13 Maritime Prepositioning Ships (MPS) which are divided into three squadrons, each capable of equipping and supplying a Marine Expeditionary Brigade (MEB) of approximately 16,500 combat marines. Another 12 ships constitute the Afloat Prepositioning Ships (APS) and carry Army and Air Force equipment and supplies. We also began to activate our eight Fast Sealift Ships (FSS) which are converted container ships modified in a roll-on/roll-off (RO/RO) configuration. These ships are maintained in a reduced operating status which allows for activation in 96 hours or less. MSC also turned to the Maritime Administration (MARAD) to activate our ships in reserve. The Ready Reserve Force (RRF) currently numbers 96 vessels: 83 dry cargo, 11 tankers and 2 troopships; laid up in various states of readiness which allow them to be ready for sea in 5, 10, or 20 days. Add to these organic assets the contribution of U.S., allied and friendly commercial shipping and, since 15 December 1990, MSC has been managing a fleet of over 200 ships. As of 1 February 1991, we had sealifted over 28 million square feet of unit equipment—enough tanks, trucks, ammunition, foodstuffs and other equipment to cover every square foot of 595 football fields. The volume of ship traffic across the seas between the U.S. and the Persian Gulf has become so great that we frequently refer to the sealift operation as "the steel bridge." At its peak on 30 December 1990, the number of ships en route to the Gulf was 132, with 44 more ships returning from the Gulf and an additional 28 ships being loaded or unloaded at ports.

I am pleased to report that the military sealift programs which you have authorized over the past 10 years have now proven themselves. The first sealift to arrive in Saudi Arabia was one of the MPS ships from Diego Garcia, delivering badly needed heavy unit equipment to back up our light infantry and marine forces defending the "Saudi-Kuwaiti border. These MPS ships have maintained a 99 percent reliability rate with many additional sailings. Our FSSs have also performed very well, with seven of the eight delivering their cargo on or before schedule, usually in just 14 days of sailing time. Even though one of these ships suffered a major propulsion failure en route to the Persian Gulf, these ships have averaged more cargo per voyage than any two U.S. or foreign chartered vessels combined, delivering 14 percent of all dry sealift cargo while maintaining an 82 percent reliability rate. While their 27-knot average speed (33-knot surge speed) is not a prerequisite for strategic sealift, their immense capacity and military utility make them an extremely valuable mobility asset.

Desert Shield has also seen the first ever large scale activation of the RRF. We have given activation orders for 70 of the dry cargo vessels in reserve. Five have been returned to MARAD for repairs leaving 65 under operational control of MSC. You no doubt saw press reports early in the deployment contending that some of our sealift ships had difficulty in meeting their activation commitments, particularly in the RRF. These reports need to be placed in proper context. MARAD, in cooperation with industry and labor, undertook a level of effort in ship activations never before attempted. Even with this extraordinary effort, breakouts took longer than planned, and 30 percent of the vessels missed their activation targets by 10 or more days. Once the ships were activated and operational control was transferred to MSC, however, the RRF fleet has performed exceptionally well. Even accounting for these breakout delays, the RRF has maintained an 81 percent overall reliability rate while delivering 29 percent of all dry cargo sealifted to the Gulf region. Anyone familiar with maritime operations and marine engineering would acknowledge that this is exceptional performance. Considering this fleet has an average age of 24 years, with many of those years spent at anchor unmanned, and that most of these aging ships were broken out of long-term lay up and hurriedly manned by merchant marine crews who responded to the call, their performance is a noteworthy accomplishment and proof that the RRF concept is sound.

The sealift deployment for Operation Desert Shield was a wartime mobility effort done in a peacetime economy. Sealift ships not owned or operated by the government were acquired for use via commercial charter. MSC began that charter operation in the early days of the deployment through the release of a worldwide contracting Request For Proposal (RFP). Analyzing the response to this RFP, MSC first negotiated contracts with all U.S. flag vessels that were offered for charter and met USCINCCENT transportation requirements. When we exhausted the U.S. merchant ships offered through the RFP process, MSC then turned to allied and friendly sources of shipping. As the deployment grew, MSC continued to charter U.S. commercial flag vessels, when available, to meet sealift requirements. Commercial shipping has moved 44 percent of all dry cargo sealifted to Saudi Arabia as of 1 February 1991, with 25 percent being moved by allied and friendly shipping. Of the total number of ships used so far, 45 percent have been allied ships, 43 percent were government owned or operated U.S. ships, and 12 percent of the ships came from the U.S. merchant marine. Although consideration was given to activating the Sealift Readiness Program (SRP), the small number of additional militarily useful U.S. merchant marine ships the SRP would have provided could not offset the severe economic disruption that activation would have had on that declining industry. Due to the potential loss of existing commercial worldwide contracts, the U.S. merchant marine fleet did not offer the capacity to meet our full sealift deployment requirements for Operation Desert Shield. The balance of our sealift requirement was satisfied by our allies and friends.

Our ability to lift more than 6.7 million tons of materiel by sea in the first 6 months of operations to the Persian Gulf region has depended heavily on the contributions of organic, allied, and friendly shipping. MARAD has predicted our U.S. merchant marine fleet will continue to decline, from 168 militarily useful dry cargo ships today to 35 by the year 2005. This decline, if unchecked, will force us to reevaluate the role the U.S. merchant marine can play in our national defense strategy. As we move away from the threat of global war and focus our national strategy on the threat of fast-breaking regional conflict, we must maintain our ability to respond to wartime transportation requirements like those we've seen for Desert Shield/Storm while operating under the constraints of a peacetime economy. This fundamental shift in strategy places great pressure on our desire, as codified by the National Security Sealift Policy of 5 October 1989, to rely on the U.S. Merchant Marine for the majority of our defense sealift needs. If we consider peacetime economic pressures in light of the continued decline of the U.S. Merchant Marine, our ability to rely on U.S. commercial shipping may be eroding. The solution must include efforts to improve both the U.S. merchant marine and our organic assets, as it has in the past. We, as a nation, should make a concerted effort to revitalize the U.S. merchant marine while continuing to develop our organic capability through additional strategic sealift ships, an RRF configured with the proper mix of well maintained militarily useful vessels, and an adequate afloat prepositioning force for rapid response. In my opinion, we can begin this effort through a balanced approach of acquiring existing ships from the world market, and constructing 25 knot diesel propelled RO/RO ships in U.S. shipyards.

Ships are not the only concern, as the pool of U.S. merchant mariners for manning these vessels is also in serious decline. From the beginning of Desert Shield, leadership in the mariners unions took immediate action to successfully crew every reserve ship as it was activated. Manning ships for a deployment of this scale is a noteworthy effort, but we must remember that the entire reserve fleet was not called up at once. While we anticipate the labor unions will continue to be highly supportive of our needs, the fact is their membership continues to decline in numbers and increase in age. Maritime industry manpower has dwindled almost 60 percent since 1970 to a current level of 27,000 and is projected to be less than half that amount by the turn of the century. The average age of a U.S. merchant seaman prior to Desert Shield was 49 years old. However, many of the mariners who manned our RRF ships were in their 60s and 70s; two were in their 80s. One possible solution to these problems is a national resolve to revitalize the merchant marine; an alternative is the establishment of a merchant marine reserve.

DOD is now conducting a Mobility Requirements Study (MRS) which will quantify our strategic lift needs for the next decade. Many of the sealift issues raised in Desert Shield/Storm will be addressed. Among the recommendations that will come from this study are the proper number of RO/RO strategic sealift ships, an optimum mix of ships in the RRF, and the size and composition of the afloat prepositioning force. The predicted demands for airlift will also be added to form a blueprint from which we can build the mobility structure of the future, a structure conceived and designed to meet the evolving threats of the 21st century.

Another integral part of the total transportation effort is the marshaling of combat forces with their heavy unit equipment. The Military Traffic Management Command (MTMC) coordinated the movement of Army, Air Force, and Marine Corps units to seaports, prepared those ports for ships and cargo, and supervised the loading operations at 28 ports worldwide. In some cases, ship modifications were necessary to accommodate loads and MTMC's terminal operators successfully used flatracks to enable container ships to carry unit equipment, even helicopters, and expedite the movement of combat forces. One thousand two hundred thirty seven out of 2,010, or approximately 60 percent of our total number of flatracks are being used in the transportation effort. MTMC carries out a lot of behind-the-scenes coordination with industry and government agencies to keep the combat units moving. On 8 August 1990, they initiated a contingency response (CORE) program that provided a pre-trained team of specialists to liaison with transportation management agencies and streamline the coordination of exemptions and waivers, and handle safety, security, facility, and transportation resource issues.

MTMC is also responsible for trucks, trains, and transloading. For example, the 101st Airborne was transported via 1,174 truckloads by 27 commercial trucking companies from their post at Fort Campbell, Kentucky, to the port of Jacksonville, Florida, over a 5-day period without a single late shipment. Since the beginning of Desert Shield, MTMC has been responsible for the transportation of more than 1 million tons of cargo by more than 23,000 trucks and over 14,000 rail cars. Their Defense Freight Railway Interchange Fleet (DFRIF) program of heavy duty flatcars has supported Desert Shield/Storm by moving heavy fighting vehicles, such as M1 and M60 tanks, and bulk fuels. When one of our fast sealift ships needed extensive repairs, MTMC coordinated the simultaneous transloading of its cargo to another fast sealift ship to get that equipment to its unit in the theater. Although the deployment effort has now diminished, MTMC still faces a continuous task, as the bulk of sustainment cargo will go by sea. During one recent week, over 3,300 40-foot containers were booked for subsequent transport by commercial container ships.

Key to the effective use of the air, land, and sea strategic lift assets is our ability to direct and control them. Desert Shield/Storm is the first major military operation in U.S. history where transportation was directed by one central headquarters. The Goldwater-Nichols DOD Reorganization Act of 1986 strengthened joint command relationships and increased the role of the Chairman, Joint Chiefs of Staff and unified commanders. In part as a result of this act, the U.S. Transportation Command was established in 1987 as a unified command to provide the unified CINCs with the global air, land, and sea transportation they require to meet national security objectives. For the first 2 years or so, our command was to mature by working deployment issues in a wartime or contingency role. During Desert Shield/Storm, USTRANSCOM executed this contingency role, assuming command of our three components and, as a supporting commander, provided strategic transportation. We delivered the forces provided by other supporting commands such as U.S. Forces Command (USFORSCOM) and U.S. Special Operations Command (USSOCOM), to the supported command, USCENTCOM, which employed the forces.

During initial Desert Shield/Storm operations, this supported-supporting relationship was crucial to USTRANSCOM's mission. USCENTCOM established the requirements and made the final decisions on priorities. USTRANSCOM then directed its components to provide the lift. We executed the deployment as it was planned: major combat units first, followed by their support forces and sustainment. Airlift took the first combat forces, the first sustainment cargo and expedient cargo, and 99 percent of the passengers in a total of 12,473 missions as of 1 February 1991. Sealift, while carrying less than 1 percent of the passengers, carried 86 percent of the dry cargo in 387 voyages and 99 percent of the fuel shipped to the Gulf as of that same date. As Desert Shield/Storm has shown, centralized traffic management is the most effective and flexible method to combine airlift, sealift and ground movements, with the ability to react quickly to changing priorities and efficiently schedule and employ transportation resources. USTRANSCOM successfully integrated the efforts of our three components and adjusted to other influences, such as U.S. Commander in Chief Forces Command (USCINCFOR) and U.S. Commander in Chief Europe (USCINCEUR) priorities for supporting USCINCCENT. By becoming the single manager for all common user lift in peace and in war, USTRANSCOM can consolidate traffic management, contract policy formation, and industrial fund oversight—efforts that are duplicated now by our three components. This streamlining is consistent with a policy of reducing forces overall, while providing improved control over the defense transportation system. We are working toward this goal with OSD and the Joint Staff. Finally, a fully integrated transportation command not only yields synchronization of effort, but spawns new transportation ideas as well. Our USTRANSCOM Headquarters team has come up with some innovative solutions to the challenges raised in Desert Shield/Storm.

While USCINCCENT operational requirements allowed for the vast majority of cargo to arrive in weeks by sea, some priority cargo had to arrive in the theater in days. To expedite these essential items, we established a "Desert Express" air service. Comparable to commercial express services, Desert Express provides "overnight" delivery for extremely high-priority items such as spare parts for aircraft, tanks, and other high-tech combat equipment. Desert Express proved to be so valuable that it was expanded to two flights a day as of 13 February 1991. A "European Express" was also created for moving equipment out of Europe, where large amounts of spare parts and equipment are stockpiled. Flown daily by C-141s, Desert Express moved over 1,200 tons and European Express carried 376 tons into the Persian Gulf theater as of the 1st of February.

Our innovative response to challenges in Desert Shield has not been limited to airlift. We also established a Special Middle East Sealift Agreement (SMESA) with seven liner services. Operating out of ports on both U.S. coasts, we have contracted a capacity under SMESA to ship up to 2,700 40-foot equivalent unit containers per week to the Red Sea and the Persian Gulf, enough to meet the projected peak sustainment requirement. To expedite air-eligible cargo diverted to sealift and other high-priority sealift cargo, we implemented a "Sealift Express" service. Using the existing terms of SMESA, Sealift Express expeditiously handles chartered cargo moving to the Gulf region with a goal of cutting shipment time to 23 days, 30 percent faster than regular SMESA service.

Orchestrating a global transportation network requires the proper automated support. USTRANSCOM has made significant strides in developing Command, Control, Communication, and Computer (C4) systems necessary to provide that support. New interfaces to the airlift and sealift scheduling systems were developed during Desert Shield to speed requirements information into the Joint Operation Planning and Execution System (JOPES). JOPES can now be used more readily in the deployment of forces and, in future versions, not only aid us in controlling follow-on sustainment, but assist theater CINCs like USCINCCENT in the employment of forces. The productivity gained through improved information flow, like those never before attempted interfaces, underscores the potential gains achievable in the defense transportation community by networking current systems. USTRANSCOM is leading the effort to establish a Global Transportation Network (GTN) which will allow any user to access transportation information from any other user's data base. A consistent level of funding for command and control systems procurement and operations must be maintained if we are to achieve this important capability.

A transportation effort of Desert Shield's magnitude also requires the right mix of properly trained people at every level. Our active duty forces were joined at the start by reservists and National Guardsmen from all services, 40 percent of whom were volunteers. Air Force Reserve and Air National Guard forces make up half of MAC's total airlift capability and over 20,000 reservists and guardsmen are presently on extended active duty with MAC. Even prior to activating the more than 3,000 Army and Navy reservists needed for continuous operations, MTMC was able to form provisional port units at key locations. Volunteer reserve personnel aided the effort outload some of the first combat units sent in the deployment. MSC reservists greatly assisted in the activation of the hospital ship USNS Comfort and reserve units at ports within the Persian Gulf are handling a great deal of the military shipments arriving in theater. Our DOD civilians working at headquarters and component levels have also been invaluable to USTRANSCOM's performance in Desert Shield. As Secretary Cheney wrote me recently, "It is a great feeling to know that our active and recalled reserve soldiers, sailors, marines, airmen, coast guardsmen and civilian personnel can come through when called upon." I agree with him wholeheartedly, confident that the people in this command can be counted on to get the job done. I have not been disappointed.

While remembering that there were many factors in our favor in Desert Shield, our ability to deploy a force to combat the fourth largest army in the world has shown the utility of our airlift and sealift assets. Never before in history has any nation transported so much, so far, so fast. The deployment has also, however, pointed to needs in our strategic lift system, needs that can be addressed by your committee, Mr. Chairman. The C-17 is vital to our future airlift capability. The Secretary of Defense's decision to build to an 18 aircraft per year production rate recognizes the need for this critical airlift asset. Your continued support of this program, and the six aircraft requested in fiscal year 1992, will ensure we reach that goal. We will also need your support on where we should go with strategic sealift. The decline of the merchant marine is real, and we are studying a number of options to counteract that trend. Do we revitalize the merchant marine industry itself? Should we build or procure even more strategic sealift ships to augment our fast sealift fleet? Are additional prepositioning ships the best way to go? In this statement, I have provided you a synopsis of the issues we are studying as we analyze the deployment of Desert Shield. The sustainment effort for Desert Storm, and the redeployment of our fighting forces after this conflict is fully resolved, will provide additional lessons on the effectiveness and responsiveness of the various modes of sealift.

The anticipated drawdown of military forces over the next 5 years underscores the necessity for strong strategic lift programs on air, land, and sea. In the post-Cold War world, the threat has changed and so has our strategy to meet that threat. This shift of focus from a superpower conflict in Europe to regional contingencies worldwide will be accompanied by a drawdown of overall U.S. forces and, more importantly, less forces forward deployed. This combination puts increased emphasis on strategic lift. The conflict of the present may in many ways be a model for conflicts in the future. The lesson we should take away from Desert Shield/Storm is that our nation must be prepared, with little warning, to project U.S. forces great distances to areas that may have little or no infrastructure. Our ability to respond to this challenge requires adequate, flexible mobility assets. The Mobility Requirements Study (MRS) is currently determining the specific lift requirements, and when the MRS is completed, we can design specific programs to ensure our future lift capacity.

When I appeared before your subcommittee last year, I stated that the USTRANSCOM objective is to support the strategic lift requirements of the unified CINCs, and that their ability to fight and win is dependent upon our ability to project U.S. forces to any theater of conflict. Desert Shield/Storm has provided a graphic illustration of that point. The time and resources required to complete this deployment of truly historic proportions underscores the critical role our strategic lift assets play in projecting our forces rapidly and in sufficient quantity to provide a credible conventional deterrent. If rapid deployment prevented Saddam Hussein from moving his troops into Saudi Arabia, then mobility itself can be seen as a deterrent to military aggression. General Powell, Chairman of the Joint Chiefs of Staff, emphasized this in his statement to the House Armed Services Committee on 7 February 1991: "Deterrence is only credible if we possess a robust means of power projection and the mobility to deploy and sustain our forces." With your continued support of mobility programs, USTRANSCOM can help promote this Nation's credible deterrent posture, both now in the Persian Gulf, and wherever we find ourselves in the future.

Chairman NUNN. Thank you very much, General Johnson. We appreciate each of you giving us your views, and we'll move now to questions. I will ask the Clerk to keep up with the time, as we usually do, and to notify each of us when our time has expired. I will begin the questioning.

General Stiner, first a question to you. General Schwarzkopf described some of the important missions performed by Special Operations Forces during Operation Desert Shield/Desert Storm. He mentioned liaison with Arab coalition forces, strategic reconnaissance, combat search and rescue, and direct action.

It would be very helpful to us if you could give us your view of each one of those missions, plus any others you might have undertaken that you can talk about and elaborate on, to the extent you can in open session.

General STINER. Thank you very much, Senator Nunn. I can cover some aspects of this in open session, particularly in those areas that General Schwarzkopf covered in his briefing. But some are still classified, as you can imagine, and we are still in the process of collecting some lessons learned.

From the beginning, our forces were among the first on the ground. I think they were employed very wisely. They were broken down and put out with the coalition units to assess their needs and to see what kind of training we might be able to give to them. We were very instrumental in that and I think it was very beneficial. They were welcomed with open arms and a very close relationship developed. In fact, it would have been very difficult to have gotten one of the coalition units to give up its Special Forces A detachment or B detachment that was with it.

Another function that we were instrumental in providing was close air support to those units. There were not enough forward air control teams available, so we provided our teams with appropriate air-ground radios, specifically PRC-113s, which we had to buy. They did not have them. And, thanks to the authority given to me as head of agency, I was able to do that very quickly, to meet that need as well as several other needs. They were instrumental in providing close air support, and the coalition units really appreciated that.

They were key in helping the coalition units to integrate their plans. They provided vital communications between those units with our satellite communications and our high frequency radios.

That was very important considering the distances that those units were laid out over.

At the same time, our Navy SEALS were training the Saudi SEALS and Saudi Marines, and our air component forces were there and they were also assisting. Our forces, from the beginning, were doing what their mission calls for.

Then, when the air war started, I think that General Schwarzkopf mentioned that some of our teams went in and knocked out some Iraqi ground control radar sites to make corridors for the fighters to come through and hit their targets. I think that was a very wise tactic and it was an outstanding way to employ Special Operations Forces. It probably contributed to the fact that we did not have any aircraft losses in that initial raid.

Then, when the ground war started, our Navy SEALS were also involved in fleet operations and were being used to board and search ships that were in violation of the embargo, and that would not stop. In preparation for the ground phase, our Special Operations Forces were inserted very deep within Iraq. You saw some of the symbols that General Schwarzkopf had on the map when he briefed. Their mission was to locate enemy units and to report on movement of enemy units. They were communicating directly with CENTCOM as well as with the conventional forces, which were attacking. I think they were very instrumental in the success of our units.

In addition to that, our forces were involved in search and rescue operations for downed pilots. To my knowledge, they recovered practically every one that was recovered. We were involved in other direct action missions that General Schwarzkopf mentioned, but I should not go into those in open session, except to say that they were very instrumental in the outcome of the war.

Chairman NUNN. Thank you, General.

ROUND-OUT BRIGADES

General Burba, Senator Glenn has done a lot of thinking on this, as have many other Members, Senator McCain and others, about the relationship between Guard and Reserves. We are going to learn a lot of lessons out of this one, I'm sure, in terms of that relationship. The 48th Georgia National Guard Brigade and others were affiliated with the Active forces as part of the round-out concept. Could you tell us what has happened in that sense and what we have learned from it at this juncture? You called them up, but called them up several months after August 2, and they then underwent training, and some of them are just completing training. Could you give us your views about what we have learned with respect to the round-out combat units of the Guard?

General BURBA. Yes, Mr. Chairman. I certainly will. We have the responsibility, of course, to send the most ready forces that we have into any conflict, particularly a contingency conflict, which is very short fused, and in this case one in which the environment was going to be very lethal.

We had the opportunity to send all Active forces to execute that mission. Therefore, those round-out brigades were not called up initially.

In other war plans that we have, they would have been called out. But we did not have a war plan for this contingency. It was short fused. We had to react on Day One, and we needed our most ready forces because of the very lethal environment. So the round-out brigades were not called up.

However, the round-out brigades were called up later using legislative authority in existence prior to the beginning of Desert Storm.

Now, initially, we had basically a 90-day usage on the 200,000 presidential call-up. With the training required, the time required to put a heavy force over into the area of operation (AOR), we did not feel that it made sense for them to participate in that scenario. Once it was clear that this was going to be a longer-term scenario and we had the authority to use them for 360 days, they were indeed called up. We immediately put them into their post-mobilization training.

The 48th Brigade has now completed that training. I personally spent an extensive amount of time with them—I think five different visits, if I'm not mistaken, out to the desert—spending days at a time with them, day and night. Despite the controversy in the media, that outfit did very well. They were called up to be used in the Middle East. Had we needed to use them, we could have used them. I personally would have recommended that they go. I would have validated them as combat ready.

Chairman NUNN. At what stage?

General BURBA. At the end of their training cycle at the National Training Center, which was last week. So they had close to 90 days' training before I found them combat ready, if they were required over in the Middle East.

Importantly, in my judgment, they do have a role in the contemporary contingency environment. The Chief of Staff of the Army's goal is to have them ready in 30 days. We were not able to do that. But we learned a lot. This is the first time we've ever called them up for a live contingency of this nature. We know there are ways that we can increase their training readiness before mobilization—during their weekend drill training and during their 2-week annual training (AT) period. We also found out ways that, once they are mobilized, we can peak them up to the necessary readiness criteria so that they can be deployed much more quickly. So we have learned a lot, and I think that we can decrease the amount of training time necessary, and get closer to the Chief of Staff's goal which is 30 days.

So I do think that they have contemporary utility. The divisions that they would have been deployed with played a very robust role in their training. There is ownership. There are good feelings there. Those two division commanders of mine—the Fourth Mechanized Division and the Fifth Mechanized Division—feel very comfortable with those round-out brigades. My prediction is that once they finish their training programs, they will feel the same way I did about the 48th's.

So, in a nutshell, number one, it is important for everybody to understand that they did well in their training programs. I'll say that very candidly. We're very proud of them; all of us are.

Number two, they still do have continuing relevance in contemporary politico-military scenarios in the contingency environment.

Chairman NUNN. Thank you, General Burba. My time has expired. I will follow up on that when I come back. Senator Warner.

Senator WARNER. Thank you, Mr. Chairman. I think that is a very important series of questions that you have placed. General Johnson, the Air Reserves and Guard, their record was exemplary. But, in fairness, I think they had the opportunity to receive more training in their role as Reservists than you can really duplicate with ground training, which I think takes a little more time. Given just 2 weeks and a monthly drill, there is a clear disparity. Am I not correct in that, gentlemen, and that is where we have to focus for the future?

General JOHNSON. Yes, sir. No question. The Reserves and Guard in the Military Airlift Command and also the MTMC and the MSC get to practice their duties almost on a regular basis, and they are ready to go as soon as they come on Active duty. They don't have the build-up time that the Army units have.

Senator WARNER. I think that is a key point.

General JOHNSON. Yes, sir.

PREPOSITIONING

Senator WARNER. On the subject of prepositioning, I had an opportunity to visit with the Commandant of the Marine Corps, and he had under his command, the Marine Corps, several ships in the vicinity, which were completely loaded with tanks, heavy equipment, and the like. They were able to move right in. As you make your recommendations up the line on lessons learned, would you place greater emphasis on the prepositioning of forces of not only the Marine Corps, but the Army and the Air Force? Why don't you start off, General Burba, and then General Johnson.

General BURBA. We also had four prepositioning ships, sir, that paid enormous dividends for us, as you know. We had ammunition, water purification equipment, other miscellaneous supplies, and ammunition. They played an enormously important role for us. They were especially vital very early on in the operation.

Senator WARNER. The question is, should they be given greater priority as we do our future military planning and increase our allocation of assets to prepositioning?

General BURBA. Yes, sir. But I think there must be a balance. But I personally have found them very useful and I would give them an increased priority.

Senator WARNER. General Johnson, how about forward prepositioning of some of your infrastructure, much of which in this instance had to be flown in?

General JOHNSON. Sir, my infrastructure is not that large. But I certainly support prepositioning. We closed the troops on the squadrons and marine maritime prepositioning ships, 16,000 to each squadron, as soon as the ships could get into the theater from Diego Garcia. It took 250 C–141 loads to do that. But it was a very good use of our assets to get the Marines' equipment there very quickly.

Senator WARNER. You got a high rate of return from it.

General **Johnson**. Yes, sir. We strongly recommend this triad approach—sealift, airlift, and prepositioning.

Senator **Warner**. You would say, then, that prepositioning was a force multiplier?

General **Johnson**. Yes, sir. That was one of the greater successes in this deployment.

Senator **Warner**. Let's turn to the question of sealift. Ninety percent, as I understand, of this logistic chain moved by sea. Should we now focus more attention on America's merchant marine and the ability to mobilize rapidly its own assets in sealift, rather than go out and rent ships?

General **Johnson**. Yes, sir. I think that the Nation ought to focus on our merchant marine. But I'm unable to tell you exactly how to approach it because, in this instance, we did not go out and force the U.S. flag ships into service. There were several reasons for that, but mainly because we had alternatives—foreign ships and the open market.

Senator **Warner**. Yes. You could go into the market and there were a lot of empty hulls out there. You were able to pick them up.

General **Johnson**. Yes, sir.

Senator **Warner**. As a matter of fact, just as a footnote, didn't we lease some Soviet ships?

General **Johnson**. No, sir, we did not.

Senator **Warner**. But we were thinking about it at one time, I believe, weren't we?

General **Johnson**. Some were offered by an agent. But the Soviets did not approve that lease.

Senator **Warner**. That's just a footnote that I wanted to clarify.

General **Johnson**. Yes, sir. But, going back to the issue of the merchant marine, we have a program called the SRP, the Sealift Readiness Program, which we did not implement. If we had, we would have pulled U.S. flag ships off of good commercial routes. We found that that would not be in the best interest of the U.S. maritime industry because, if we had pulled them off, Soviet ships would have been pleased to take up those routes.

Senator **Warner**. You did pull off air assets, though.

General **Johnson**. Yes, sir. But we did not pull off enough to hurt them economically. The U.S. airlines have a better comparative position in the world market.

DEPLOYING PARENTS

Senator **Warner**. Let me turn quickly in the few minutes that I have remaining to General Burba. You have responsibilities for filling out and augmenting deployed forces from within your command. At some point, this committee and, indeed, Congress, has to visit again this issue about the single parent being deployed into areas of high risk and also the double parent situation. I hope, first, that you are working on some analysis of that; and, second, that you will be making recommendations up the chain of command. Am I correct on that?

General **Burba**. Yes, sir. Senator Warner, you are absolutely right. We are studying it, looking at all the incidents or problems that developed. Importantly, there were not many of those. There were many, many success stories of parental programs and family support programs that really worked quite well.

Senator **Warner**. Are you prepared now to give us any preliminary recommendations with respect to future recruiting, future mobilization, as it relates to the single parent and double parents into areas of high risk?

General **Burba**. I'd like to wait until the analysis is in. But my candid opinion at this juncture is that it introduces so many military problems if you do not deploy soldiers that you brought on Active duty——

Senator **Warner**. Yes, but you might do some planning before you put them in those units which are most likely to be called.

WOMEN IN MILITARY

Let me just finish my last question in the minute that I have remaining. In my judgment, given the role of women as professionals in this Gulf military operation and the sacrifices, the loss of life, and the injuries that they suffered, it is incumbent upon Congress now to reexamine their military opportunities and whether or not at some time in the future a woman might be sitting there in your seats, bearing the same decorations that you have received throughout your careers, and wearing the highest rank obtainable in our military forces. There is a perception now that that career path, from where they are now serving to that seat in which you are now residing, is not open. We have to look at it. Is that also a question, General Burba? Since you have the most number of personnel, I expect, the largest number under your command, are you looking at that? Will you have recommendations to your superiors which eventually will come to Congress?

General **Burba**. Yes, sir. There has been a continuing departmental level study of the women in the Army over the years. There have been some fundamental changes to make more lucrative career patterns for our women soldiers. We will continue to look at it. The experiences in the Persian Gulf will be factored in to that. I can just say that they make absolutely magnificent soldiers and their contributions are overwhelming.

Senator **Warner**. Absolutely. This chapter of our military history documented that beyond any reasonable doubt. Mr. Chairman, I don't know whether either of the other witnesses have a contribution to be made with respect to women. If the Chair would afford them that opportunity, perhaps they would respond. General Stiner, do you have a view on that?

General **Stiner**. They do an outstanding job in the positions for which they are qualified. But there are some jobs, by virtue of physical limitations, that would be very difficult. That is the reason that combat arms are closed to women right now. I think the rules and the current policy on where they can serve are good ones.

Senator **Warner**. And I think they bear reexamination in the light of this experience. General Johnson?

General **Johnson**. Sir, women are qualified to do virtually all of our roles; and they do them very, very well, without any distinction between men and women.

Senator WARNER. That is a powerful statement, General. Thank you very much, Mr. Chairman. I thank the witnesses. I will return after the vote.

Senator EXON [presiding]. Thank you very much, Senator Warner. We are going to try to keep going. We do have a vote, gentlemen, so Senators will be coming and going. Let me, if I might, delve into just a general question. First, I want to add my words of high compliment to this. From the Commander in Chief, to the generals, to the people on down, to the privates, you just did an outstanding job. I think somebody said it was a textbook success case, probably more textbook and more successful than any you ever could have envisioned during your extensive training period, schooling, and operations leading up to this. I suspect that you'd never felt that you could be part of an operation that was quite as successful as this one. It couldn't have been any more successful, could it, gentlemen?

General JOHNSON. [Nods negatively.]

General BURBA. [Nods negatively.]

General STINER. [Nods negatively.]

Senator EXON. So that we perhaps can learn for the future, because that's what it's all about now, that's what we're going to have to make some decisions on, was there any place where we fell down? Or, if we didn't fall down, were there places where you think we can make improvement? I think you have already alluded to the fact, General Johnson, that we need more lift. Obviously we need that. We have some systems coming along, and we need to do that. Are there other areas that you perhaps would like to expound on where you think we should be looking to the future?

INTELLIGENCE

I particularly would like to ask the question first about intelligence. Were you satisfied with the intelligence that we had in that particularly most difficult part of the world, where I realize intelligence is pretty hard to come by? How do you rate our intelligence agencies' commitment to carrying out the duties that you were required to do, you and people working under you? Let's start with you, General Stiner.

General STINER. Thank you very much, Senator Exon. Perhaps General Schwarzkopf and Judge Webster should address this question. From my standpoint, we had outstanding overhead systems, and you saw examples of that every day in the daily briefings that were given. These were used for targeting and bomb damage assessment and for other requirements. But the United States—and this is no secret—is weak in the area of HUMINT intelligence. That has been known for a long time and emphasis has been attempted to be put on that.

Now, I would like to come at this problem from a different side. As we look to the future, we all acknowledge that the threat has changed somewhat, from bipolar, from the East-West threat, to one that is multi-polar. We need to focus more on the Third World countries. Although the overhead systems are great and we're the world leader in that and we should stay there, we need to focus on intelligence requirements associated with the Third World. Those overhead systems do not do that much good for contingency operations in the Third World. Therefore, the United States needs to reorient its priorities and begin to focus on the Third World and to correct the deficiencies that we now have.

But back to Operation Desert Storm. We were very instrumental in providing the intelligence that was available to General Schwarzkopf. I have an intelligence system called Special Operations Command Research Analysis and Threat Evaluation System (SOCRATES), which is computer-based and the most advanced in the world. I provided CENTCOM SOCRATES terminals. CENTCOM had access through that system and directly, real-time access, to all intelligence that was available from all national agencies here in Washington.

Senator EXON. I guess what you're saying is that the sum and substance is that you would wish that we could focus on some more human intelligence along the line somewhere?

General STINER. Yes, sir. That's exactly right.

Senator EXON. General Burba or General Johnson, do you have anything to add to that from your perspective?

General BURBA. Senator Exon, I can just reinforce General Stiner. When I went over to Saudi a couple of months ago, I talked to the Army component commander, who is normally my deputy here in Forces Command and the 18th Airborne Corps Commander, who was one of my corps commanders. They corroborated in spades what General Stiner has just indicated. Both were very pleased with the intelligence that they were getting in that environment. There was initially a problem of getting the intelligence down to the lower level units. They fought through many of those problems and the system seemed to be working reasonably well.

That's about all I can add because I don't have any intelligence responsibility within the continental United States.

General JOHNSON. From the transportation perspective, we had good intelligence support. From previous positions, I'd certainly echo what General Stiner says on HUMINT.

Senator EXON. Let me put the question in this way. We were awfully good. Everything was executed, as near as I could tell and from the briefings that we had, open and closed and everything else. It wasn't, though, until just before the land phase of the operation began and after the very successful devastation that was wrought on their command and control that I began to feel that the military command were more secure in their sense of a quick, certain victory than we had been earlier. We earlier had predicted, had thought that there might be heavy casualties, as evidenced by the fact that we had a massive amount of personnel to take care of losses. Would you say from the intelligence that came to you in your command responsibilities that possibly we had over-rated the ability of the enemy, at least in some areas?

General JOHNSON. I certainly don't think so from what I saw. Certainly his capability was there, and that's what the military has to plan on. Our effectiveness degraded that significantly. I was not directly involved, but I did see the intelligence, obviously.

Senator EXON. General?

General BURBA. Senator, you can never underestimate an enemy in this lethal environment; you can't underestimate his capabilities. He made several blunders. He failed to synchronize the capabilities that he had available to him. He certainly didn't take care of his soldiers, which is a fundamental tenet in our business, and that led to his undoing.

Senator Exon. Or to put it another way, General, he evidently didn't have any intelligence at all.

General Burba. Sir, I think that is well put.

Senator Exon. My time is up. Senator Cohen.

Senator Cohen. Thank you, Mr. Chairman. General Stiner, as you know, the Special Operations Command was established in part because of the perception that the Special Operations Forces had been suffering from a number of problems, including inadequate airlift, poor command and control integration with the conventional military force structure, inadequate intelligence support, poor military career opportunities, and generally inadequate funding. Would you agree that those were some of the problems that afflicted the Special Forces in years past?

General Stiner. Yes, sir. I agree with you 100 percent.

Senator Cohen. I want to mention that because there was an article that appeared in the Los Angeles Times, I think dated February 28, by Melissa Healy, and she had a fairly detailed report on some of the activities that the Special Forces did, in fact, perform. It's quite a lengthy article. I assume that she took much of this from a briefing that General Schwarzkopf had given. But I was intrigued with the very end of the article itself, where it pointed out: "But if Operation Operation Desert Storm marks a turnaround for Special Forces, it's nothing compared to the transformation those elite troops have made since Vietnam, when one senior official conceded, 'Some commandos were a little out there on the fringe.'" Then the quote came as follows: "The money spent on Special Forces has nothing to do with this. The missions they performed were exactly the missions they had in Vietnam. The difference is in their leadership, the motivation. These are superior troops, more educated, more motivated, and better led." I don't think anyone would disagree with the conclusion about the leadership, the motivation, and the education. But I think the money did have something to do, a great deal to do, with what has happened with the Special Forces, let's say in the last 5 or 6 years.

General Stiner. Most definitely. I would say all of the above. You know, we're in the process now of trying to collect lessons learned, and many of them are classified. We're just getting started on this process. But I was trying to anticipate how I would answer if I were asked the question of what we learned from Operation Desert Shield and Operation Desert Storm and what utility I found in the Defense Reorganization Act of 1986 and the Cohen-Nunn amendment. This is the way that I was planning to respond.

Senator Cohen. I'm glad you're asking the questions I haven't asked yet. But go ahead. [Laughter.]

General Stiner. The utility of the Defense Reorganization Act and the Cohen-Nunn amendment should be very vivid to all of us as a result of what has happened. The Defense Reorganization Act also gave the regional CINC the authority to take the forces, plan, organize them the way he saw fit, and have them fight. That's what you saw in Operation Desert Shield and Operation Desert

Storm. It also gave me the responsibility and the authority to provide the regional CINC trained and ready forces, and it gave me my own program, Major Force Program II.

Senator **Cohen**. It gave you four stars, too, didn't it?

General **Stiner**. Yes, sir.

Senator **Cohen**. You may recall the Pentagon wanted to have a three star in that position, as I recall.

General **Stiner**. Yes, sir. That's true. Thanks to you all on that also. [Laughter.]

General **Stiner**. But it gave me control over the provisioning of Special Operations Forces to him. We've put a lot of money into our programs, but some of the programs have not come to fruition yet. They will in the very near future. For example, we have new combat Talons in the program that are coming on; we have new gunships that can fire from 24,000 feet and shoot down through the clouds much more accurately. If we had had one of those in Operation Desert Storm we might not have lost the gunship and the 14 people we did. But we found out, for example, that our existing fleet of Chinook helicopters was at great risk in flying in that environment, and so were our HC-130 tankers. With the authority that I was given as head of agency, I was able to make adjustments in my program and pull forward certain modifications, work them on a crash basis, and get those helicopters over there upgraded as necessary to fly and survive and perform their mission in that environment.

I mentioned a while ago that Special Operations Forces needed some extra equipment. They needed SATCOM radios; they needed PRC-113 radios to bring in close air support. In fact, I received 23 requests, emergency requests for equipment and ammunition that were needed over there right away. I validated 19 of these and funded them out of my own program. All 19 items were over there with a fielding team within 34 days. Some of these were special weapons. They were all used in the war. Four of these items were used in the clearance of the embassy in Kuwait. I had the authority and flexibility to provide Special Operations Forces and the equipment they needed to accomplish the mission.

I was talking to Major General Wayne Downing the other day about gathering lessons learned. He said, "you know, sir, there is one thing that is vivid, very vivid right now. We have validated that the way that we were training was right on, and we should not change that training for combat." He stated that in some respects there have been some missions over here that have been a little bit easier than the way we train. So we validated that our training program was to the right standards and we've also validated that what we've got in our program in the way of modernization and enhancements is appropriate. It's what this Nation needs to give us a capability to deal with the low intensity situations, nation-building, contingency-type operations, and counter-terrorist requirements that we are likely to face in the future.

Senator **Cohen**. Mr. Chairman, I ask unanimous consent that I be given an additional 5 minutes since General Stiner took 5 minutes to praise Senator Nunn and Senator Kennedy, as well for his support of the Special Forces.

Chairman NUNN [presiding]. I'll give you 10 minutes and let him repeat it. I wasn't here. [Laughter.]

Senator COHEN. General Johnson, if I could shift to you, funding for the procurement of sealift ships during the past 2 years has been located in the Navy ship building account. We have some $200 million that is planned for fiscal year 1993 also in Navy ship building. I guess the question I have for you is what would be your reaction if we were to transfer the funding for sealift from ship building and conversion Navy to procurement defense agencies?

General JOHNSON. I think that the Navy will spend the money this year. I also think that the Department of Defense will provide them good guidance on how to spend it. I'm led to believe that they're coming to a solution on the correct way to go, building some new ships, buying some other ships. I think you'll see a good reaction this year. But I believe the Navy is the best prepared of all of our government agencies to buy ships.

Senator COHEN. Well, it may be best prepared to buy the ships in terms of administering the programs. But we have, in fact, a war taking place between building of warships and the building of ships for the transportation of essentially Army equipment. It seems to me that one potential solution might be to transfer that responsibility, at least the funding responsibility, to defense agencies procurement rather than the ship building account if we're going to maintain the kind of ship building capability dedicated to the building of the warships that we need for our missions.

General JOHNSON. I agree that there needs to be a fence on sealift funds and that might be one way to do it. But I believe it is effectively fenced now.

Senator COHEN. Mr. Chairman, my time is up. Thank you.

Chairman NUNN. Thank you, Senator Cohen. Senator Kennedy.

Senator KENNEDY. Thank you very much. I, too, want to join in commending those who are here today. I had the good chance to meet General Stiner down at Fort Bragg some time ago, and I have certainly admired the strong leadership that he has provided. General Johnson, we have worked on a variety of projects involving the sealift and the airlift, and I welcome the chance to commend you on all of the work that you and General Burba have provided.

I think as the focus and attention has been on those who went across the border, it is entirely appropriate that we give the focus, the attention, and the commendation to those who got them there and gave them the support to be there.

Let me, General Johnson, talk about sealift. As you are very much aware, Congress in fiscal years 1990-1991 appropriated over $1.5 billion, and about $1.3 billion remains. They also, primarily at the urging of this committee, had $15 million for research in advanced sealift technologies. I understand that Department of Defense now plans to spend the $1.3 billion available for the sealift programs. I imagine they are going to do the same on the technologies as well?

General JOHNSON. Yes, sir. That's my understanding.

Senator KENNEDY. I would be interested in what you might be able to tell us how that $1.3 billion is going to be expended.

General JOHNSON. The Department of Defense is doing a Mobility Requirements Study and will report back to Congress later this year. I believe they will present a balanced approach for spending these funds. I believe that this is the way to go and have recommended that we buy more ships like the Fast Sealift Ships that have been so valuable, though not quite as fast—25 knots is fast enough—but a roll-on/roll-off ship, the number of which will be determined.

We also found that we need more of the roll-on/roll-off ships in our Ready Reserve Fleet to handle General Burba's forces. We'll push for buying more of those types of ships for the Ready Reserve Fleet and perhaps take out some of the break/bulk ships that are not as useful as they once were. But also, as mentioned earlier, I would see us having more afloat prepositioning.

Senator KENNEDY. And in the areas of technologies, can you tell us what you're thinking about in terms of those types of technologies?

General JOHNSON. Sir, in technology, they will probably continue to look at hull designs. When that technology money was provided and our approach was first begun, we had thought in terms of very fast sealift, perhaps on the order of 40 knots. But the propulsion system that that requires is not very efficient, and we, universally now, I believe, have decided that a 25-knot ship is about right. In fact, those 33-knot Fast Sealift Ships really only averaged 22 knots during Operation Desert Shield. That was because of high seas and several other reasons. I asked the question, if these ships had only been able to have a top speed of 25 knots, then what would their average speed have been. They said, well, maybe 21 knots. So, 1 to 2 knots of additional average speed is not worth the tremendous inefficiencies of a very fast engine. So I think that the design money will be spent looking more at hull design now. Early-on, we were looking at hydrofoils and other such designs. But that really doesn't make sense for a sealift application.

Senator KENNEDY. Let me just go over to the C-17 program. I think all of us, certainly on this committee, have been strong supporters of the C-17 program and can understand its additional importance now, after this whole operation. I have heard that as of last summer, the program was roughly 1 year behind the schedule. And as I understand it, the first flight may have to slip until August 1991, and then the first flight of the first production aircraft, the P-2, the milestone for awarding that contract has slipped until at least December 1991. What can you tell us just in terms of the time slippage and what that is going to mean?

General JOHNSON. Sir, since we last spoke, the time has not slipped. Now, there might be a higher risk associated with a June flight date than there was last year. But I still believe it's low risk, as does the company.

The McDonnell Douglas Company, and Douglas in particular, has been under great scrutiny on that program. The Deputy Secretary of Defense, Mr. Atwood, will be briefed next week, I believe, and I am also led to believe that the findings indicate that there are no hidden problems and that there are no technical challenges that we will have a difficult time in overcoming. The aircraft can be produced. It has been produced. There are, however, concerns about the financing. They want to make sure that Douglas can, in fact, build the aircraft for the price they are saying they can. They also want to make sure that McDonnell Douglas can, in fact, carry the program. In other words, they are concerned about the financial health of our defense industry. As far as the airplane is concerned, though, there are no technical problems. There are also no problems from my perspective. There are only some from a contractual and a financial standpoint.

Senator **Kennedy**. Well, the contractor, as I understand it, achieved the event milestone for the production lot 3 in December, 1990, and the contract had not been awarded.

General **Johnson**. Yes, sir. Lot 3 has been held up in this review. It is my understanding that the company and the Air Force have reached an agreement. The Department of Defense has not yet agreed to it though. So I think that we are nearer to contract award for Lot 3. But you are correct in that it was held up, as we relooked at that program, to make sure that it was healthy. And I believe it's passed with flying colors.

Senator **Kennedy**. Fine. Thank you, Mr. Chairman. My time is up.

Chairman **Nunn**. Thank you, Senator Kennedy. Senator Thurmond.

Senator **Thurmond**. Mr. Chairman, I ask unanimous consent that my opening statement be included in the record.

Chairman **Nunn**. Without objection, it will be done, and also the opening statements of Senator Dixon and Senator Glenn.

[The prepared statements of Senators Dixon, Glenn, and Thurmond follow:]

Prepared Statement by Senator Alan J. Dixon

Mr. Chairman, at the outset, I want to offer my heartfelt congratulations to the President and to all of our military services for a job well done in Operations Desert Shield/Storm. The planning and execution of this campaign was outstanding.

It is a pleasure to have with us today such a distinguished panel. I look forward to hearing from Generals Edwin Burba, Carl Stiner, and H.T. Johnson, and to learning more about the contributions to Operations Desert Shield/Storm made by the Unified Commands.

Having followed the Persian Gulf conflict since it began last August, I was particularly impressed with U.S. Transportation Command's ability to carry our forces to the theater and direct the military transportation system during these operations. I am concerned, however, that so little of the 90 percent of the cargo shipped by sea for Desert Shield went by fast sealift. I am also concerned that approximately 50 percent of that cargo was handled by foreign flag ships.

I understand that had the C-17 been in our inventory, we could have greatly increased our equipment deliveries in the early stages of Desert Shield. That additional airlift capacity would have significantly reduced the amount of time our troops were dangerously exposed in the early days of the build-up.

Transportation and logistics issues may not have the sex appeal of new missile systems or other major new delivery systems, but they are critically important. In some future crisis, the United States may not have the advantages of easy access to ports and major airfields in the immediate crisis area. We need to be able to deliver men and material even in a hostile environment where we have few basing or overflight rights and perhaps little world support.

With this in mind, I look forward to the testimony of our expert panel.

Thank you, Mr. Chairman.

Prepared Statement by Senator John Glenn

I would like to add my personal thanks and appreciation to each of you, General Burba, General Stiner, and General Johnson, for your leadership and dedication in support of Operations Desert Shield/Desert Storm. Your efforts, and those of the men and women in your command, both here in the United States and those in theater, contributed directly to the combat readiness and effectiveness of this most successful joint service operation.

PREPARED STATEMENT BY SENATOR STROM THURMOND

Thank you, Mr. Chairman:

General Burba, General Stiner, General Johnson, welcome to today's hearing. I have had the pleasure of meeting with all of you during the past year and it is a pleasure to see you again.

Although the focus for the past weeks has been on the glorious accomplishments of our forces in the Middle East, we should not forget that there were equally dedicated men and women of the Forces, Transportation, and Special Operations Commands behind the scene who contributed to the victory.

Not only did your commands provide superb support to the 500,000 men and women deployed in the Persian Gulf, they also sustained and supported the forces deployed throughout the globe in support of other national security interest. I want to recognize and express my appreciation to you and your subordinates for these accomplishments.

Mr. Chairman, the victory in the Persian Gulf is history. We must now take the lessons learned and apply them to the capabilities of our future forces. My concern is that the forces projected in the President's defense budget will not have the capability to respond to a future Desert Storm.

Not only are we cutting our conventional force structure by approximately 24 percent over the next 5 years, but we are also making significant reductions in our strategic forces. I need not remind my colleagues of Director Webster's testimony which reflected his concern that the Soviet Union is continuing to modernize its strategic forces. This modernization program in his words: "will substantially improve their strategic capabilities."

Mr. Chairman, although we are constrained by last year's budget agreement, we have an obligation to review the long-term implications of the reductions in the defense budget on our Nation's defense. We cannot allow our forces and the security of our Nation to be put at risk.

Senator THURMOND. General Johnson, we welcome you, General Burba, and General Stiner today. We are glad to see you. General Johnson, a large portion of the strategic sealift employed to move equipment and supplies in Operation Desert Shield was commercial vessels, both United States and foreign. In chartering ships for Operation Desert Shield, was the cost of U.S. and foreign vessels competitive?

General JOHNSON. Yes, sir. Now, we went to the open marketplace, and in all cases, the cost of comparable shipping from friendly and allied, or foreign flag ships, was less than U.S. flag. In all cases, we went through the proper procedures to offer the lift to U.S. flag ships first, NATO flag ships next, and then to foreign flag ships. It was a competitive process, and you have to recognize that it was also a competitive market. Toward the end, we wanted more ships to move General Burba's forces. But the British were also in the market at the same time, and we did have some pricing competition. But the price was not out of line, sir.

Senator THURMOND. General Johnson, according to press accounts, some ships with foreign crews refused to enter the Persian Gulf because of the potential danger. Are these stories correct? If so, was there any delay in getting supplies and equipment to our forces, and what is the solution to correct this problem, if it existed?

General JOHNSON. Sir, to answer the last part of your question first, there was no delay because of foreign crew reluctance to enter the Gulf. You have to place the situation in context.

Senator **Thurmond**. Did you say there was or there was not?

General **Johnson**. There was no delay because of that.

Senator **Thurmond**. I see. Thank you.

General **Johnson**. You have to place the situation in context. Our U.S. Navy had put out a notice to mariners about the great hazards inside the Gulf. You might recall that was in the news. We did have some instances where some of the foreign crews negotiated with their owners to change with other crews. In one case, the owner off-loaded the cargo from that particular ship and put it on another one. In all cases, though, the commercial owner made good on delivering the cargo. The one ship that was transloaded was the only one that you might say was delayed slightly.

U.S. ARMY RESERVE COMMAND

Senator **Thurmond**. General Burba, in last year's authorization bill, Congress directed that the Army establish and evaluate an Army Reserve Command. Since your prepared statement does not address this matter, would you provide us an update on the status of the command and what, if any, role it played in Operation Desert Storm?

General **Burba**. Thank you, Senator Thurmond. The command was set up provisionally on 1 October of this year. By that time, we were already 2 months into the Middle East crisis, so it did not play a robust role in Operation Desert Storm. However, the officers and noncommissioned officers assigned to that provisional headquarters did play an important role. The Commander of the U.S. Army Reserve Command is the Chief of the Army Reserve. He is dual-hatted. He also played an overriding role during Operation Desert Storm. So, the headquarters itself was instituted 2 months after the crisis occurred. But the people in that organization played an overriding role.

LEGISLATION FOR RESERVE CALL-UP

Senator **Thurmond**. General Burba, based on the experience we now have with the call-up of Reservists, both unit and individual, do you have any recommendations on personnel legislation that need to be enacted to facilitate the call-up and ease the transition of these men and women into and out of the Active Army?

General **Burba**. Senator, that is being studied at the departmental level and at the Office of the Secretary of Defense. They are very actively analyzing the congressional package that is being proposed. I know they are looking on it positively. Once they analyze it, it will come down to my headquarters for our comments and recommendations. That has not occurred at this time, but it will in the near future.

Senator **Thurmond**. General Stiner, what impact will the decline in the defense budget have on your command? Do you anticipate any force structure reductions?

General **Stiner**. Thank you very much, Senator Thurmond. I would certainly hope not. In fact, the U.S. Special Operations Command is still in the process of trying to stand up/build up and take charge of those responsibilities that were intended in the law, Title X, that raised it. I'm referring specifically to the Special Operations Research and Acquisition Center (SORDAC), the modernization of the aircraft, and many other modernization programs that are on the books.

Also, when you look to the future, as I indicated in my opening statement, I see perhaps the greatest use of Special Operations Forces to be in peacetime. We must still maintain combat capability, or that surgical capability to protect our interests against terrorist acts and for other contingency operations around the world. But we need to employ Special Operations Forces as instruments of U.S. national policy as parts of regionally tailored programs as a coordinated effort with all appropriate governmental agencies in doing something about the problems that exist in these underdeveloped countries. Hopefully, if we do our job right in that regard, we won't have to fight. So I would hope that we continue to grow so that we can fulfill that responsibility.

Back to the question that you asked General Burba a moment ago, the establishment of the Army Reserve Command does give me a problem. I understand that there is consideration to correcting this problem. The law, Title X, assigned all Special Operations Forces, Active and Reserve, to me. The law that was enacted, Code 167(b), that assigns all Reserve forces to General Burba, gives me a dilemma. This provision prevents me from fulfilling my statutory responsibility in that regard.

Senator THURMOND. I understand that is being changed pending legislation.

General STINER. Thank you very much, Senator.

Senator THURMOND. We will take care of it for you.

General STINER. Then I will say no more.

Senator THURMOND. I thought that would save you time from talking any more on this subject.

Chairman NUNN. Senator Thurmond, I won't count this against your time. I want to say I think that's right. I think we took care of that in the supplemental that passed out of here yesterday, General.

General STINER. Great.

Senator THURMOND. General Johnson, we all agree that the C-17 could have significantly enhanced the strategic airlift support for Operation Desert Shield. Could you briefly describe how the C-17 could have contributed to the intra-theater airlift?

General JOHNSON. Yes, sir. First, on the inter-theater, we could bring 12 more squadrons in plus 2 brigades the first 12 days. But inter-theater, it would have been equivalent to a squadron of C-130s. It could do both of those at the same time.

Senator THURMOND. General Stiner, as a former Civil Affairs Officer and Commander of the 360th Civil Affairs Brigade, I am interested in the role civil affairs played in Operation Desert Storm and what role they will have in the rebuilding of Kuwait.

General STINER. Thank you very much, sir. I'm glad that you asked that because I was remiss a while ago when I responded to Senator Nunn and talked about the contributions that we had made. From the beginning of Operation Desert Shield, like with Grenada and Operation Just Cause, our Active duty civil affairs forces have been committed to the man immediately. We only have 172 authorized in the Active structure.

We have about 10,000 in the Reserves. So we had to resort to a call-up immediately, which we did, by calling up units, assessing their state of readiness at Fort Bragg, training them up when it was needed, and shipping them out. We have shipped over about 2,000. They are the kinds of units needed and they have been involved in all the activities that will be necessary to conclude Operation Desert Storm, the combat part, and to support the nation-building activities of Kuwait.

We have sent over tactical civil affairs people that have taken care of displaced persons. They have done surveys of damage and those kinds of things. Then there are the higher level civil affairs people that are involved in helping the Kuwaitis—and this planning has been going on for quite some time—to restructure and raise the institutions of government, as well as transportation, education, police, water, finance—Kuwait is pretty good in finance, but we have experts over there to assist. Our civil affairs efforts are headed by a brigadier general, Commander of the 352nd, and they will stay there for as long as they are welcome to stay and assist.

Senator THURMOND. Do you feel the civil affairs units are providing a valuable service?

General STINER. Yes, sir. Most definitely.

Senator THURMOND. I believe my time is up, Mr. Chairman. Thank you very much.

Chairman NUNN. Thank you, Senator Thurmond. Senator Levin.

Senator LEVIN. Thank you, Mr. Chairman. Let me add my welcome and gratitude to each of you and the forces under your command for the absolutely stellar work that was performed during the Persian Gulf war. We are all ~~in~~ your debt and it will be remembered a long time by everybody in this country just how magnificently your forces operated. It's not the most glamorous or most in the media forefront, but it is absolutely critical in each of your cases. We just want to add our voice to every voice on this committee in expressing that feeling.

C–141

General Johnson, let me start with you. During your testimony last year before this committee, you described the life expectancy of the C–141. I think you said that it had a 45,000 hour life expectancy and that at that time the average was about 31,000 hours that had already been put on it. You also mentioned that cracks in the wings of some of those aircraft were appearing and that this development was limiting training. Can you tell us whether or not the strain of transporting U.S. forces and equipment to the Persian Gulf has, tell us what it did to that average, and what it did to our fleet?

General JOHNSON. We have been keeping the C–141s very busy and have only been looking at those wings to make sure that no more cracks occur. But we calculate that in the past 7 months, we've put a year's worth of life on the aircraft. Now, the environment they've operated in is not as severe as in training. In training, we'd be flying low level with some of General Stiner's and General Burba's troops. That's a very high severity factor. We'd also be doing heavy weight refuelings. In Operation Desert Shield and Operation Desert Storm, we have flown normal strategic lift missions. So we have not put on any undue stress. But we have put a lot of hours on those aircraft.

Senator **Levin**. A lot of extra hours?

General **Johnson**. Yes, sir.

Senator **Levin**. Is that reflected in any way in the supplemental, those extra hours?

General **Johnson**. Only in spare parts, sir. Of course, we use more spare parts the more we fly. An interesting sideline is that we had been concerned all this time with cracks on the bottom of the wings. Those are the ones that could make the wings come off in flight. About 3 weeks ago, we looked at the tops of the wings. We had a suspicion about that area and of the first 7 that we looked at, we found 5 cracks. I was quite concerned, so we looked at all of the airplanes. But we never found another one out of over 200. We did have to repair those five. Statistically it is hard to believe that you'd get all 5 in the first 7, but we did. We continually watch the C-141 because of fatigue. It is growing older and is well past 32,000 hours now as a fleet and is going on to the 45,000 hour life expectancy.

SUPPLEMENTAL

Senator **Levin**. Were you involved in preparing the cost for the supplemental appropriation?

General **Johnson**. Yes, sir. We all provided an input. For our part, obviously it was the transportation cost, the spare parts, and that sort of thing.

Senator **Levin**. Is there any way in figuring out in terms of either the supplemental or the cost of the war what that extra number of flying hours cost us? It's like depreciation on a car. When you buy a car and you use half of it, that costs you something, even if there is no repair on it because you're using up part of the life of that vehicle. The same thing is true with a plane. Is there any way of assessing that in the costs of the war?

General **Johnson**. We could calculate how much it cost to fly in the spare parts, but depreciation on the life of the airplanes would be very difficult to do and it is certainly not in the supplemental.

SEALIFT IN OPERATION DESERT STORM

Senator **Levin**. What kind of sealift problems did we have? You've gone into that I think already somewhat today. We heard one report that one of the eight Fast Sealift Ships had a propulsion problem. If you haven't already covered that today, would you tell us about that.

General **Johnson**. No, sir, I have not. The Fast Sealift Ships have two boilers, and they are steam turbines. They go 33 knots. One ship, on its first voyage, developed a feed water problem and, in turn, a boiler problem. We repaired it all the way across the ocean, sometimes under its own power, sometimes under tow. Finally, we had to re-tube the boilers when it reached Spain, and we're still working on those boilers.

The other ships were nearly flawless in their performance. We had difficulty in breaking out the Ready Reserve Fleet from the

James River and elsewhere. Once we broke them out, though, they had a reliability factor of 93 percent, which is better than you can expect from a new ship. But in the breakout we did have problems. We were unrealistic in expecting to break those ships out so quickly.

We also had to go to the foreign fleet, and that worked well through normal marketplace procedures. Those were the challenges for sealift.

Senator LEVIN. Is the wear and tear on our sealift capability part of the supplemental?

General JOHNSON. Some of the spare parts would be. But the only ships that we own are the eight Fast Sealift Ships. And, of course we're concerned with the Ready Reserve. The Department of Transportation maintains that under the Maritime Administration. Those ships cost $1.5–$2.0 million each to break out and make them serviceable, and it costs $2.4 million to put them back into reserve status.

Senator LEVIN. Again, on the wear and tear issue, the depreciation part of it is not reflected in the supplemental, and you don't know of any practical way to put a dollar figure on it?

General JOHNSON. No, sir.

MERCHANT MARINE

But since you're talking on the subject of depreciation, I must tell you that the depreciation of our seamen, the merchant mariners, is the one we are most concerned about. We have at least two gentlemen who are over 80 years old who answered the call for manning the ships. One is 82; he's a navigator on one of the Fast Sealift Ships. The average age of these mariners is about 50 years old and increasing. Moreover, the Denton Commission showed that the active workforce is small and continues to decrease. We are very concerned about that. It is not something that we in the Department of Defense can fix. But we are certainly concerned about the maritime industry.

Senator LEVIN [presiding]. Thank you. My time is up. Senator Lott.

Senator LOTT. Thank you, Senator Levin. I would like to pick up just briefly on the discussion you've just had. For 20 years—and I've said this before in this committee—we've been talking about the need to have a better merchant marine, and we've done almost nothing about it, although we've done some of the fast sealift ships. I think this time we were lucky. First, we did have the available fast sealift ships. We had the Ready Reserve, which we had some problems with. But once you got them broken out, they did fine. And we had the foreign flags. That's where I think we were lucky. In a different type of conflict, we may not have been able to call on those. So, looking not just at what happened but looking at things we need to do to help be prepared to address this problem in the future, let me ask you two questions.

READY RESERVE FLEET

Number one: what can we do to help alleviate the problems you had with the breakout of the Ready Reserve, realizing, now, that

that is not directly under your control, when they're in that condition? Could we spend more money, or some more money, that would get those vessels in a better position to be able to be broken out quicker?

General JOHNSON. Yes, sir. We could do two things. One, we could maintain them better. Two, we believe that we need some sort of cadre manning. Those ships had no masters, no engineers. You would hire them from the union halls and they would come onto an unfamiliar ship. Whereas if we manned them with a minimal crew, with a master, an engineer, and some others, then they would know the ship and know how to bring it out. That's the first thing, to maintain them better with cadre manning. But we should also do dock trials and start the engines annually; do maintenance; and break them out for exercises more often. We can fix that problem with the proper support.

Senator LOTT. Let's work on fixing that problem.

General JOHNSON. Yes, sir.

Senator LOTT. Second question: presume the next time we need these vessels we're not going to be able to get foreign flag vessels. What can we do to be prepared to have the capabilities we need without a substantial foreign flag commitment?

General JOHNSON. Well, sir, there are a couple of things we can do. I would be remiss if I didn't tell you that General Burba and I would very much like to have more of the roll-on/roll-off capability in our Ready Reserve Fleet. We have a difficult time loading military unit equipment on a break bulk ship. So, first, we should put more roll-on/roll-off ships in the Ready Reserve Fleet. We should also look at the breakout schedule and make one that is reasonable. We should buy some more strategic sealift ships of the roll-on/roll-off type, like the 25-knot Fast Sealift Ships. And I think we should have some more afloat prepositioning ships also.

V-22

Senator LOTT. Excellent. Thank you very much. That will be helpful to us. General Stiner, I missed some of the questioning with regard to our helicopters. I understand you said that you found that there was some vulnerability for Chinooks. Let me just ask you a specific, direct question. Would the V-22 have improved your rescue capability and made that rescue capability less vulnerable?

General STINER. Let me answer that in a way so that I don't get cross wired with the Secretary of Defense. We have medium range helicopters in our Pave Lows, MH-53Js, and our CH-47 Deltas. In our program we have enhancements for the MH-47 Echo, which is air refuelable. The 47 Chinook I'm talking about is air refuelable and has instrumentation to permit terrain avoidance, a terrain following the radar, and other defensive capabilities. These helicopters can go a distance of about 450 miles and come back.

Senator LOTT. How fast?

General STINER. About 120 knots. We have a requirement to put teams in and take teams out in hostile territory, out to a distance of 900 to 1,000 miles. We do not have the capability to do that right now. We can put them in by dropping them from airplanes, combat Talon C-130s, or C-141s for that matter. Combat Talons are best because they can go low level and avoid some of the enemy defenses. The problem is we can't get them out because we do not have anything that will go that distance and land in a restricted area and come back. So we are looking at a requirement that is along the lines of the CV–22 technology. We think that we've gone about as far as we can go with our helicopters speed and distance-wise. We are either going to have to forget extended missions, accept higher risks, or come up with something that will fill the void.

Now, I can tell you that for some of the SAR missions, the search and rescue missions that we ran this time, some were of such great distance, one in particular, that even with the MH–53 Pave Low helicopter, and as capable as it is, we could only haul on the two helicopters—for the extended distance mission—two medics and two PJs, also known as para-rescue people. We could not put a security detachment of [illegible] 10 people on each one, like we wanted to, because we would not have had enough fuel to go to where we thought the downed pilot was and get back.

Senator LOTT. Thank you, General. I think that you've got enough words in there that it won't be real clear, but I think I heard you say "yes." At least I heard you say "yes." I'm sure the Secretary of Defense would be able to find that there.

General STINER. Sir, what I said was some kind of technology to fill that void. [Laughter.]

Senator LOTT. That was for you, John. [Laughter.]

ROUND-OUT BRIGADES

Senator LOTT. General Burba, last question and two points, very briefly. The Chairman asked you about the round-out concept. Of course, I was watching particularly closely the 155th of the First Cavalry, a group associated with the patch that you have on your shoulder. I would be interested in how their training worked, but, more particularly, in the broader question, and that is directly. I didn't hear you say definitely whether the round-out concept was something that really worked and that we want to continue, or should we switch over and use them in more of a back-up role instead of a round-out?

General BURBA. Sir, basically in the contingency requirement, the first thing you need to do is get a deterrent force over there to take your airfields and your seaports for lodgment purposes, for follow-on forces. That initial force needs to leave the first day that the crisis arises, or as soon as you have authority to deploy them. They have to be Active component forces. They have to leave the first day. All of our experience, all of the gaming that we do indicates that you need to get a force into the crisis area as soon as possible to stabilize the situation. They need to leave very quickly.

In the case of the Middle East, Operation Desert Shield, the 24th Mechanized Division left immediately. It went down to Savannah and started loading ships on day one. So those forces have to leave very quickly.

Now, that force stabilizes a situation. It doesn't give you the capability to win, but it precludes your losing. We need Active component combat forces to form those stabilization forces. With this stabilizing force, you can have Reserve combat support, artillery, aviation units, air defense artillery—ADA—units, et cetera; and you can have support units, combat service support. But you need combat Active component forces because you just can't get the Reserves ready in time, because they need to leave immediately.

Now, this stabilizing force buys you time. They keep you from losing. They don't win, but they ensure you don't lose. They buy you time. Then you bring your "early reinforcing forces" at a later date. I do think that the round-out concept has utility for those early reinforcing forces, and I have so recommended.

Senator **LOTT**. How about the 155th?

General **BURBA**. They're doing well. They're at the National Training Center now. I spent I think three or four occasions down at Fort Hood with them, days and nights. They're coming along well. I'll be going out to the National Training Center here I believe next week to spend some time with them out there. That's the culmination of their training program. It's the most critical because it factors in the most realism and you can get a hard look at how well they've come along. My prediction is, based on what I've seen to date, that they're going to do well. I have high hopes.

Senator **LOTT**. General, if I could just take 1 second more just for a comment, I think you can tell from the questioning, both from the Chairman and from me, that we have some doubts about just how—or at least I do—well that has worked. And we're going to want to hear, or I'm going to want to hear, some more from you about exactly how it worked and how we're going to do it in the future.

General **BURBA**. I understand.

Chairman **NUNN** [presiding]. General, on that point, if I could ask one follow-up, then I will yield to Senator Glenn. If you had it to do over again, would you call up the round-out National Guard units at the very beginning, that is, in early August, for training purposes so that they would have been prepared and trained in time to be of considerable use in the November-December-January timeframe?

General **BURBA**. Yes, sir. If we knew at that time we were going to have 360 days to employ those round-out brigades, I would have recommended that we call them up to go through their post-mobilization training immediately. At that time, of course, we didn't. We had 180 days—90 plus 90—of authority under the Presidential 200,000 call-up. That's what made it difficult. But if we knew from the beginning that we had 360 days and that they would have high utility if we needed them in the Middle East, then certainly I would have recommended that we call them up.

Chairman **NUNN**. Thank you. Senator Glenn.

V-22

Senator **GLENN**. Thank you, Mr. Chairman. General Stiner, your testimony today, like your predecessor's last year, states, and I quote: "There exists today neither a long-range SOF air exfiltration system nor a near-term program to acquire one. The lack of this capability presents a severe shortfall to SOF mobility and hinders our capability." General, as you know, last year Congress funded the development of the V-22. We even put in $8 million to pursue the Special Operations Forces version of that. But, of course, Secretary Cheney has today chosen not to execute the program.

As a combatant commander, have you formally submitted your operational requirement for the SOF version of the V-22 to the Chairman of the Joint Chiefs of Staff and the Secretary of Defense?

General **Stiner**. No, sir, I have not, the SOF version of the CV-22 *per se*. We have submitted a requirement for some kind of an airplane to fill that void for long-range infiltration.

Senator **Glenn**. By long-range, you mean about a 1,000 miles.

General **Stiner**. Sir, that's the general distance.

Senator **Glenn**. But we don't have anything like that right now that can still do the vertical landing. Wouldn't we rather have something with around 500 miles range and have a bird in the hand, rather than go off on a new design that will take 7 or 8 years?

General **Stiner**. We can go 450 to 500 miles with what we have now.

Senator **Glenn**. But at 120 knots.

General **Stiner**. At 120 knots, that's correct.

Senator **Glenn**. I don't understand the hesitancy not to go ahead with what we have. If we follow the Department of Defense lead, I think we are going to wind up buying them back from the Japanese 4 or 5 years from now. We might as well make them ourselves.

The Japanese are starting a program similar to the V-22. If we think about not just the rescue mission, but every military and civilian function that we have for a helicopter, especially when we are planning to replace many of our current helicopters, I cannot understand why we don't move ahead with an aircraft such as the V-22. This is a rough rule of thumb—twice as far, twice as fast, and in some cases three times as fast, but at least twice as fast and carry a third more payload. Does it get locked in over at the Pentagon? I'll just call it for what I view it as, "stubborn obstinacy" of not being willing to change minds once a decision is made even though the new situation in the Gulf certainly demonstrated the demand for the V-22's capabilities.

In the war, we had about a dozen pilots down. I have a list here which I think is classified, so I won't read through these. It gives out the distance and the time it takes for the V-22 versus the others. It's very, very impressive. In fact, there were several missions that you couldn't do. It's out of range for anything except the V-22.

When shot down, the old rule of thumb was—I don't know what it is these days—but it was if you didn't get picked up in 30 minutes, you could probably forget it. Now, I know that you had missions over there that ran 6 to 8 hours, but they were conducted in basically a non-hostile environment. It's hostile any time you're north of the line. But you were not flying through anti-aircraft and using speed and having to dodge bullets in most of those places where the guys went down. I think that is a very critical part of this whole thing. What rescue missions were performed during Operation Desert Storm that could have been performed better and faster by the V-22 if you'd had it?

General STINER. I do not have any way of making a comparison, capability-wise, between our Pave Low helicopters and the V–22 and the ability of one over the other one to penetrate and maneuver and avoid in that environment.

Senator GLENN. But wouldn't you like to have something where you could go in twice as far and twice as fast and carry more payload?

General STINER. Yes. I've stated a requirement for that. Yes, sir.

Senator GLENN. And we have it if we'd just go ahead with it. Congress has already provided that. That's the point. I just think it's ridiculous that we don't move ahead with this thing. We have a chart here that compares the SAR performance, a comparison of different types of helicopters and the V–22. It's way out there. As far as I'm concerned, if I were downed someplace, I'd certainly want the V–22 coming after me and not something that goes 120 knots and doesn't go as far and as fast and doesn't get me out as fast either. Just one more question on that. Is the V–22 being looked at again as a result of the experiences in Operation Desert Storm?

General STINER. I don't know whether specifically or not from Operation Desert Storm, but there is research and development going on. I was only given $8 million last year, which is not much money to do much of anything with. We're using that to study a new radar jammer and look at some——

Senator GLENN. You were given that specifically to look into a V–22, an SOF version of the V–22. Did you take that money and do something else with it?

General STINER. We're looking into various aspects of that.

Senator GLENN. What was it you said just a moment ago? You took the $8 million and used it for radar what?

General STINER. We are studying a radar jammer.

Senator GLENN. And you used the $8 million you were given for the V–22 development?

General STINER. That's just part of it. The fiscal year 1991 efforts include qualification of SOF variant avionics, a radar frequency jammer study, and design and development efforts for the radar.

Senator GLENN. But not applied to the V–22 necessarily.

General STINER. It's related to RDT&E associated with the V–22.

Senator GLENN. Okay. But specific with the V–22?

General STINER. Yes, sir.

Senator GLENN. Okay. But that wasn't what I understood you to say just a moment ago.

General STINER. This was limited to development funds specifically for the CV–22 that we were given.

Senator GLENN. Okay. I do have some more questions, but my time has expired, Mr. Chairman.

Chairman NUNN. Thank you. Senator Exon.

Senator EXON. Mr. Chairman, thank you very much. Gentlemen, let me return to some specifics that can help us out in the future because I want to get your expert opinion on them. Let me first go, if I might, to you, General Johnson.

SEALIFT

Many, many years ago, there was a significant discussion about whether or not we should develop fast sealift capability. At that time, of course, we were consumed primarily with the situation of reinforcing NATO in the case of a Soviet attack. We forced through at that time some fast sealift capability that I am sure you used with this magnificent job that was done that's been alluded to. I believe you testified that 90 percent of the materiel that we had to get over there went on sealift. Do you have any breakdown? I just want to give you an opportunity here. Is there a breakdown between the tonnage that went on Fast Sealift Ships, of which we don't have very many, as opposed to regular sealift? Do you have any recommendations from the experience that you've had with regard to whether we look into the future for a projection of forces around the world, which I think will be one of the things that we will be weighing here? Give us some advice on what your experience was with fast sealift and regular sealift and what formulas you think we ought to be addressing in the future.

General JOHNSON. Yes, sir. We had 8 Fast Sealift Ships and, in essence, they made 32 voyages. So you can see that some of those ships made four and five trips because of their speed. The total number of voyages for all types of vessels was 454, but those eight ships carried 13 percent of the total cargo.

Senator EXON. Eight ships out of how many?

General JOHNSON. Actually, there were seven because one only made the one voyage and didn't get credit for any deliveries since it had to be transloaded. So seven ships carried 13 percent of all sealift cargo delivered.

Senator EXON. And how many ships carried the rest of them?

General JOHNSON. Let me give you a comparison. Thirty-five percent of the total ships were foreign flag, but they only delivered 27 percent of the cargo, so you can see those are smaller ships. Some of the APF and the MPS came into common use after offloading their prepositioned cargo. They were very efficient also. They were not quite as big as the FSSs, but they were the same type ship. They carried a very high percentage of the cargo, 11 percent. The Ready Reserve Fleet delivered 28.5 percent, and the U.S. commercial flag delivered about 20 percent.

Senator EXON. It seems to me, General, that you did an excellent job. Obviously, you were just grabbing at everything you could get your hands on to carry what you wanted to move, right?

General JOHNSON. Yes, sir. But we couldn't always carry it quite as fast as General Burba and General Galvin wanted. You see, we had several challenges. I always thought that weather only bothered airplanes, but the North Sea became such that you couldn't sail on it in late December and early January, so we had some delays there. But a bigger problem was that we didn't have the right kind of ships. We wanted roll-on/roll-off ships, and General Burba and I wrung our hands many times about how we'd rather have a different type of ship than we had. That's why we are stressing the roll-on/roll-off ships.

But the world shipping community responded very well to our challenges. And I must tell you that we had good support from

Kuwait, the Koreans, and the Japanese—all gave us free ships. They paid for them.

Senator **Exon**. Future-wise now, if you had to be setting some goals or budgets for the future, with the experience that you have garnered from this operation, is it safe to say, then, that you suggest that we have a beefing up of our fast sealift?

General **Johnson**. Yes, sir. I think everyone in the transportation community accepts that we need that. Last year I would have recommended that we go into a partnership with civilian industry on these ships. This year I say that we need to have them moored up and ready to load General Burba's equipment. But we also have to have the seamen to man those ships. That's the part that we have a hard time putting our arms around. We in the Department of Defense are not responsible for the merchant marine industry. But, for defense reasons, as Americans, we are very concerned about it.

Another thing we need to do is to try to use more containers. General Burba and I are trying to figure out how we can use more containerization to ship things. Take ammunition. I was down at Sunny Point, North Carolina, and we were loading it like we did in World War II. So we need to modernize and use containerization more and more. We are working that.

Senator **Exon**. What can you tell me, General, about a spat that I read about in the newspapers, I believe, with regard to some tanks that—it must have been some time in December, or in the early part of January, in that timeframe—were very desperately needed to beef up our tank force? They were supposedly delayed because a ship was diverted because of crew troubles to Italy, I believe. Are you familiar with the episode that I am referencing?

General **Johnson**. Sir, I vaguely remember an episode where there was some talk about a crew coming down from Germany and stopping in Italy. It turned out that there was not a problem on board the ship after all. We had a young individual on board that perceived a problem, so the ship stopped. We changed the escort, if you will, and it continued. I think that's the incident. I'm not sure you'd know about that, Ed. It was coming out of Europe.

Senator **Exon**. Do you know anything about that, General Burba?

General **Burba**. No, sir, I don't. Those were Seventh Corps tanks coming out of West Germany. I knew that the ship stopped. It was a very quick stop, as I recall, and then it was on its way.

Senator **Exon**. So it wasn't a major problem, as it was described in the news media?

General **Johnson**. No, sir. It would make a nice novel. But, otherwise, it wasn't a big deal.

Senator **Exon**. Thank you. My time is up, Mr. Chairman.

Chairman **Nunn**. Senator Warner.

Senator **Warner**. Mr. Chairman, I just want to join with you in thanking our panel for coming in today and for providing some very helpful insight into our future reconfiguration of the military as we address this critical issue of reducing the size of our military in the face of the budget constraints. Thank you and good luck. We are very proud of you and your subordinates, from the stars down to lance corporal, that served under your respective commands.

Chairman **Nunn**. Thank you, Senator Warner. Senator Glenn.

ACTIVE COMPONENT—RESERVE COMPONENT MIX

Senator **Glenn**. Thank you, Mr. Chairman. I'd like to come back to the idea of what we've learned out of Operation Desert Storm as far as this mix of Reserve and Regulars. I chair the Manpower Subcommittee, and, going back almost 4 years, we kept asking to do a new study of the total force policy, which hasn't been revised since it was put into effect in 1973, which basically separates out the roles and missions of the Guard, the Reserve, and the Regulars. It seems to me there ought to be some lessons here. Let me continue, though, with the total force policy.

The Pentagon—we finally put that in writing last year and required it, since they hadn't responded to verbal requests over a 3-year period. They sent us a total force policy study draft in September that didn't really do much except explain the chronology of what had happened on Operation Desert Shield at that time. Then they submitted a final report in December that was a little more complete, but not enough to really give us much guidance.

We have to address this problem of descending manpower that we worked out last year, where we're going to pull down about 100,000 a year for a 5-year period, for a total reduction of 494,000 over a 5-year period. Now, we passed legislation to let that be held in abeyance here through the current situation, which we had already told Secretary Cheney we'd be glad to do whenever he thought it was appropriate, and that's been done. I am concerned, however, that as we design this force for the future, whatever we define as the threat, we must do so with what we have learned from Operation Desert Storm and Operation Desert Shield. It seems to me that we are going to be into this debate again about whether the Reserves should really be in a combat role, as opposed to combat support and combat service support. The round-out brigade in question is one of them.

Certain functions, air, are performed admirably in some of the Reserve functions. But that's a little different, where you have the squadrons, and people who enjoy the flying, their pilots may be airline or whatever. They keep a better proficiency than people do who are in perhaps a combat round-out brigade who only train for just a few days a year. The Regulars are out there full time. So, it seems to me that now is the ideal time to examine some of these changes as we consider a new total force policy and determine our structure for the future.

I know the easy thing to say is that it worked this time, we got the people there, and we did learn some things, but let's not change the structure on who does what. We have to think about who's going to do the combat support, the combat service support, the medical—which we've been way, way behind on for a long period of time. We've scavenged people out of our hospitals to get them over there. Situations such as this mean we have to make some different arrangement as we design these forces for the future. Now is the ideal time to do it.

General Burba, could you give me some ideas on what worked well in combat support, what worked well in combat service support, what didn't work so well, and what kind of scrambling went on for the medical. Is the round-out brigade really something that we don't want to be a round-out, as you described it a minute ago, where the forces go over and they're joined with some other outfit later on, which seems a bit cumbersome to me, as opposed to putting people out there, full combat units, ready to go and they know exactly what they have? Do we have enough cargo handlers? Where did the system come up short and where did it come up with surpluses? What changes could you advise us on, even at this early stage, before we make a complete analysis?

General BURBA. Sir, there are those skills in our military units that have a civilian equivalency—pilots are a good example; doctors; truckers; transportation.

Senator GLENN. Cargo handlers also.

General BURBA. Yes, sir. In areas with civilian equivalency, our Reserves do very well. Many of them do the same tasks in their civilian sector positions. They also do reasonably well those skills that they can train well on the weekend because the weekend training is critically important. Those type skills are, for example, Army aviation. We have very good aviation units in the Army Reserve. This weekend training capability applies to a variety of different types of skills.

We have good artillery units. We have good air defense artillery units. When I say "good," I'm talking about that they can be used very quickly. I'm not denigrating the combat skills. It just takes longer to bring them up to standard. So there are those skills which they can be trained up reasonably quickly because they're at a higher readiness standard before mobilization.

The skills that they have a difficult time with are the combat skills. Number one, they're maneuver skills—cavalry, infantry, tank, combat engineers—that take a lot of space. It's training that is not normally accommodated around their home towns and cities.

The other major issue, though, is that the maneuver arms—armor, infantry, and cavalry—at the company level and above must integrate all the other specialties in the Army. They synchronize not only tank and infantry units, but artillery units and air defense artillery units, some mortars, Army aviation, signal, and all the logistical skills. So they have to integrate everything. It's that synchronization which is so difficult. It's more an art than a science. It takes time to master. So the Reserve combat units don't do those well, and it takes longer to train.

Now, the civilian equivalency skills, we were able to execute those deployments immediately. Some of those units were called up one week and their equipment was gone the next. Then, as soon as the equipment arrived in theater, the soldiers were airlifted in. Some of the problems that we had with medical units were that we had the proper number of doctors and nurses, but we had them packaged wrong. We had a large number of units, but many had low readiness. You don't like to break those units. But we eventually solved that problem. So we can package better. But, principally, those units with civilian equivalency skills can go on Day One.

The combat support skills that you can train easily on the weekend you can deploy a short time later—30 days or so. Training combat units synchronization skills is going to take longer. But this is not to say that they still don't have an important part to play in our structure. If we could afford all of our combat structure in the Active components, that would be great. But we find that to create a balanced program and to continue our modernization, to buy our personnel programs, to have quality soldiers, et cetera, we can't afford to have all of our combat structure in the Active component. So the best solution that we've come up with is the round-out concept.

Now, they will not deploy immediately. They won't go on Day One and they won't go with the second follow-on forces that go over to stabilize the situation and buy time for you. They just can't be ready quick enough. But they do, indeed, have utility for our early reinforcing divisions. Had we had a stalemate in the Middle East and we had to send the Fourth Mechanized Division and the Fifth Mechanized Division, my recommendation would have been that they go with their round-out brigades. That's why I say that that concept does still have important utility.

We're going to have to do some things differently with round-out brigades. We found out a lot of things. We know how to train them better before mobilization. We know how to train them better after mobilization. We're going to do that, and I think that we will be forced, for affordability reasons, to continue some sort of a round-out concept.

Senator GLENN. Does anyone else have a comment on this, as you have watched this whole thing transpire?

General JOHNSON. As you would expect, our Reserve forces worked very well, sir, including the medical. We have all of the aeromedical evacuation personnel in MAC, as well as many of the hospitals. We were over-subscribed with Guard and Reserves, even as volunteers, without the call. Again, it's because of a civilian-related industry. They were already doing directly related jobs and they were ready to serve. It worked very well.

Senator GLENN. My time is up, but let me just make one comment, if I might, Mr. Chairman. One of the things that has concerned us the most in manpower, as we have looked at it in the subcommittee through the years, and the full committee has been concerned about it, too, is this combat medical. It's assigned 80 percent to the Reserves.

Now, out of that 80 percent, we had a shortage of 71 percent of the doctors short in that 80 percent, which was about 7,000 doctors short for all of the Department of Defense. And we had 31,000 nurses short out of that 80 percent. So we just weren't really signed up. As we asked questions about it, when this effort started over there, they were pulling people out from all over the place to get them over there and as we were told some hospitals here were left reasonably short-handed.

So that may be another area. We put incentives in for medical personnel and they had some impact. There was some good benefit from that. But it's an area that we really weren't able to cope with. It would have been okay because we scavenged things in this country to get people over there. But it's something that in the Reserve component we have to consider into the future on how we're going to do that. I don't have the answer to it.

My time is up. But if you have any thoughts on this, rather than waiting for some big, formal analysis and report, share some of your thoughts with us on this because we are really looking for guidance on how we do some of these roles and missions out of this total force policy study. If we're ever going to make any changes, to make more efficient, bottom line, better combat capability, now is the time to do it. We would appreciate your advice, all of you. Thank you.

Chairman NUNN. Thank you, Senator Glenn. I just have one final question. We have a vote on the floor, and I will yield to Senator Exon. I hope we can probably wrap this up since we will be interrupted here for about 15 minutes with a vote.

TACTICAL AIRLIFT

General Johnson, last year, as you know, we transferred the tactical airlift mission to the Air Force Reserve and National Guard. One of the main reasons we did that is because it's been years and years and years since the Air Force modernized or requested the modernization of its tactical airlift units. We did put a delayed date on it so that we'd have time for you to consider it and for us to consider it and to revisit it, if necessary, and so forth. What have you learned about tactical airlift in Operation Desert Storm? What does the decision mean that you've now made, apparently, to request the planes to modernize your tactical Air Force?

General JOHNSON. First of all, we're very pleased that the Air Force has decided to buy some new aircraft to replace the older C-130s. In this type of operation—and General Stiner, I believe, has some views on this also—we need the immediate response capability that our Active forces give us to respond to this, plus humanitarian and other high priority missions around the world, as well as forward deployments. Also, while those Active forces comprise about 37 percent of the total C-130s, they support 72 percent of the joint training with the Army, day to day, just because they have more time to do that. It works very well.

The Guard and Reserves came on fairly quickly. Before we could activate units, I asked them to form provisional units. They did. The Guard had one and the Air Force Reserve had one. We called them up for 30 days and rotated them once. By that time, we had more call-up authority and we called a total of 10 units. They served in Southwest Asia as well as in Europe, with two units here in this country. So the mix worked very well. We very definitely need a continuous Active component in the tactical airlift forces. Our tactical forces and strategic forces are totally integrated now around the world.

In the theater, tactical airlift will work under the operational control of the theater CINC, which is the way it should be. But I am still in their chain of command and take care of their needs after sending the aircraft and troops forward. In supporting General Stiner, we maintain some C-130s with highly qualified aircrews on alert to support his special needs, and it would be difficult for the Reserve forces to meet that sort of commitment. And we have other commitments like that around the world. I would very much appreciate your reconsideration of this issue, sir.

Chairman **Nunn**. Thank you. We'll visit with you on that as we go through this bill this year. Senator Exon, I'm going to ask you, if you would, to close this out. Let me finish by thanking General Johnson, General Burba, and General Stiner for being here. Again, thanks to you and your entire command. If you would, pass that on in terms of your service to this Nation. You have all been splendid and we're very proud of you.

MILSTAR

Senator **Exon**. Thank you, Mr. Chairman. I just have one question and I'll give you all briefly a chance to respond to it. I'm not sure it's a fair question, based on our experience in Operation Desert Shield and Operation Desert Storm because, obviously, the enemy in this case had practically all of their jamming devices, command and control and communications essentially knocked out fairly early. But I am, again, looking to the future on a lot of the programs that we're working on. I'm going to ask about Milstar. I'll start with you, General Stiner, and the Special Forces behind the front operations. Do you see, either from your experiences in the Gulf or what you might face as the Special Operations Commander in other situations, a driving need for Milstar, as it has now been somewhat redefined and reemphasized, as a communications facility that could go directly to tactical ground forces?

General **Stiner**. Sir, I'm going to have to provide that answer for the record.

[The information follows:]

MILSTAR

We endorse Milstar as an important and much needed military satellite communications capability. The recent restructuring of the Milstar program will make the system even more viable for types of tactical applications in which USSOCOM is involved. We fully support Department of Defense efforts to bring the Milstar program to fruition.

Senator **Exon**. General Burba, are you or General Johnson familiar with it enough to give me a preliminary response to the question?

General **Burba**. Yes, sir. We strongly support the program. As we transition from the bi-polar environment into a multi-polar contingency environment, where we don't know where we'll be fighting with many threat areas and unpredictable and uncertain conditions, short fuse contingencies will probably be precipitated. Communications, strategic communications, are going to be absolutely essential to us. And so I think that this program is enormously important. I can guarantee you that it is for our command.

Senator **Exon**. I'm not talking about strategic. I'm basically asking the question of whether or not it's particularly critical to base ground force operations, which we have been told it was. General Johnson, I've never run into an Air Force general that isn't for it. So I'd be surprised if you said to the contrary. But you must know about it. So give me your response to the question.

General **Johnson**. Sir, I'm a former programmer, and I know Milstar very well. Even in my current position, we support Milstar. We certainly are not the predominant user. It has many capabilities that we would not use, but we do plan to use it in the command and control and the tactical arena. Again, we're not the predominant user, but I do support it, sir.

Senator Exon [presiding]. Gentlemen, we really appreciate your excellent testimony, which has been extremely forthcoming and helpful to the Committee. Since the vote is on and we have probably worn you out, we simply thank you for being here. We will be having you back again, I am sure. With that, we are adjourned.

[Questions for the record with answers supplied follow:]

Questions Submitted by Senator Sam Nunn

READINESS REPORTING SYSTEM

Senator Nunn. General Burba, you are responsible for the readiness of Army and Reserve component units. I have heard many comments during the past 6 months on the validity of our C-rating system, both for Active and Reserve units. How did the C-rating system compare with our actual experiences during the past 6 months?

General Burba. Overall, C-level reports from the system compared very favorably with actual status measured when units were alerted (Active Army) or reported to mobilization stations (Reserve components).

The C-status is a product of the Joint Status of Resources and Training System (SORTS), and indicates the levels of fill of people, equipment, and the training status of the units. It is an indicator, but not directly a measure, of readiness. One thing that it does not do is indicate the *capability* of a unit to do the specific mission at hand. Other factors become more important—factors such as the unit's designed capability, its specific training strengths and weaknesses, and its responsiveness are all considered in terms of the task at hand rather than the statistics used to compute C-levels. Because of this, C-ratings are valuable indicators, but will never replace the commander's subjective judgment. The final decision is made on the unit's ability to accomplish the mission.

The SORTS does what it is designed to do. It provides C-ratings which can be used in a crisis to identify candidates for deployment missions. Once those candidates are identified, however, it takes sound, professional, military skill and judgment to make the final selections. Not unexpectedly, we found that some units which appeared to be good candidates were, in fact, not as well resourced or trained as their category levels indicated. The units in this category, less than 5 percent initially and growing to about 10 percent as we moved deeper into the pool of units, are not alarming. Most of these differences occurred because of differences in interpretation of reporting requirements, or as the result of new realization of training requirements.

Initial Reserve component call-up for Operation Desert Shield focused on units in the highly prioritized and resourced essential force. C-status of these units generally reflected their resourcing priority. Some didn't meet deployable criteria at first. All were fixed readily, so that it wasn't necessary at first to look for units with "higher" C-ratings. As more of the same type units were needed beyond those in the essential force, careful selections were made for an enhanced package from units lower on the resource priority list. Here, more had to be fixed. These took more effort not only because they had been farther down the list, but because there was a shrinking pool of equipment and MOS-qualified personnel available to fill them.

Senator Nunn. General Burba, what needs to be done to make the readiness status system more accurate?

General Burba. We must work with the Joint Staff to make the status report simpler, more informative, and standardized. We will train commanders to use it better and we will restrict exceptions to policy.

One of the immediate Operation Desert Shield/Desert Storm lessons learned was that Army Reserve and Active Army units' reporting requirements differ from the National Guard's. These differences required reporting adjustments upon unit arrivals at mobilization stations. While the problem was not insurmountable, differences caused some unexpected drops in status when Guard units reported to mobilization stations. Standardization will solve this problem.

Reporting procedures must be refined to identify training needs more realistically. But as we refine reporting procedures, we must also improve commanders' ability to recognize the training requirements they report. Readiness evaluation is more art than science. Despite the objective criteria of the readiness system, it is the subjective judgment of the commander which determines his overall evaluation of his unit's readiness.

The Status of Resources and Training System is a joint system promulgated by the Joint Chiefs of Staff. FORSCOM and the Department of the Army are already working to resolve Army technical differences to improve the joint system—working to review information requirements and develop a single, simplified, total Army unit status report to expedite the selection, preparation, and deployment of units.

CHANGES TO THE ROUND-OUT CONCEPT

Senator NUNN. General Burba, your statement indicates that "some substantive changes will have to be made (to the round-out concept), but the concept has merit for our later deploying units." Can you be more specific about what changes you think are necessary to the round-out concept?

General BURBA. We must improve round-out units' readiness to accelerate their deployment posture. Solving this problem will not be easy. The commanders, leaders, and soldiers of our round-out brigades have performed far beyond reasonable expectations considering the complexity of the task and the limited availability of training time. We must reduce the problem and I feel we can achieve this by:

— Improving the quantity—20 percent is a reasonable goal for all priority units—and quality of full-time support in units and readiness groups and aligning them to better address small unit training needs.

— Harnessing multiple technologies including simulations to increase the amount of relevant training possible at weekend training locations.

— Making annual training more demanding and realistic.

— Reducing training distractors.

— Formulating and executing more robust, RC specific, institutional leader training programs.

— Achieving a more realistic balance of individual training and small and large unit collective training during weekend and annual training programs.

— Decreasing personnel turbulence and retaining more specialty qualified soldiers.

Let me outline the overall concept in more detail. Prior to mobilization, during weekend training, individual and crew level skills must be the centerpiece of the unit's training program. Basic gunnery and preventative maintenance skills must also be honed to Army standards to establish a base for progression to small unit collective skills.

During the unit's annual training period, basic collective skills must be exercised to standard. This includes small unit—platoon and company—maneuver and gunnery. It also includes the exercise of critical tactical sustainment functions—maintenance, supply, medical, communications—under field conditions within a battalion and even brigade multi-echelon training framework. We must create and provide resources for a system of Reserve training centers to accomplish this goal.

Because time requirements for training basic skills to standard will dominate available pre-mobilization field training time, battalion and brigade commander and staff synchronization will predominantly be simulation based. This type of training must be aggressively pursued so that our leaders can be prepared to orchestrate the complex operating systems of today's airland battlefield. This includes attendance at the Tactical Command Development Course.

Schools for Reserve component officer and NCO development and special qualification training also must be pursued to precipitate technically and tactically proficient, homogenous fighting units.

We are developing the details, to include resource requirements, of these and other programs to improve readiness. We are not excluding the possibility that major changes may be required.

Senator NUNN. General Burba, will all of the round-out brigades continue to be affiliated with the divisions they currently round out?

General BURBA. There are no current plans to change round-out brigade affiliations. However, we are assessing needed adjustments of force structure to allow us to downsize the Army while maintaining the best possible balanced capability to meet our Nation's uncertain future strategic requirements. Clearly some major changes will be required and this could possibly result in modification in round-out structures and affiliations.

REALIGNMENT OF UNIFIED AND SPECIFIED COMMANDS

Senator NUNN. General Burba, General Johnson, and General Stiner, in his statement before this committee last month, General Powell described four basic force packages and four supporting capabilities. The former included Strategic Forces, Atlantic Forces, Pacific Forces, and Contingency Forces; while the latter included a Transportation Capability, a Space Capability, a Reconstitution Capability, and a Research Capability. This sounds like a realignment of the unified and specified combatant commands and possibly a shift in some roles and missions. Where do you see your command fitting into those force packages and supporting capabilities and what would this mean in terms of roles and missions for your component commands?

General **Burba**. The Unified Command Plan is being reviewed by the Joint Staff. That process is still in a very preliminary stage and lacks sufficient definition at this time to permit us to determine whether there will be notable change in Forces Command's roles, missions, or command and control arrangements.

General **Johnson**. The force packages and supporting capabilities the Chairman discussed in his testimony are, to my knowledge, conceptual in nature. This concept has yet to be fleshed out and translated into a command structure, and any changes, if any, to traditional service roles and missions determined.

I would not envision any dramatic changes to USTRANSCOM nor the roles and missions assumed by its component commands through the implementation of this concept. We are today a supporting command, providing the common user lift required by the warfighting CINCs and the services. The capability this command represents, and its impact on our ability to project force, has been dramatically demonstrated through Operation Desert Shield/Desert Storm. General Powell has recognized the importance of transportation in meeting future threats to our national security by including it as one of the four supporting capabilities.

General **Stiner**. The total composition of the Unified Command Plan (UCP) has not been determined; however, the organizational structure described by General Powell should not change significantly how our forces support the regional commanders. Regardless of changes to the UCP, Special Operations Forces have global responsibilities across the spectrum of conflict, and our components will continue to focus on equipping and readiness responsibilities. The unique capabilities of these forces should not be constrained by another layer of command that would alter or dilute current responsibilities and authority.

Senator **Nunn**. General Stiner, would this mean, for example, that U.S.-based Special Operations Forces would be assigned to a new Contingency Forces Command and that the Special Operations Command would either be disestablished or become a sub-unified command?

General **Stiner**. To my knowledge, no decisions have been made on the composition and responsibilities of the Contingency Force.

As we look to the future, the demands and utility of our forces could be higher than any of the services. They will have world-wide responsibility in peace and war, regardless of Unified Command Plan realignments. They are highly effective in carrying out foreign internal defense and nation building programs including collective security and regional security assistance programs. Our forces routinely support the national programs for combating drugs and terrorism. To get maximum utility out of our forces it is important to maintain direct access and be a co-equal to all CINCs. The legislation establishing this command was based upon sound logic and principles. We have made great progress in correcting deficiencies resulting from years of neglect. Subordination to a Contingency Forces Command could dilute the effectiveness of our Special Operations Forces and hinder discharge of specific responsibilities and authorities intended by the legislation.

LESSONS LEARNED

Senator **Nunn**. General Johnson, Operation Desert Shield/Desert Storm has been the only major activation of the Ready Reserve Force (RRF), and the only time that the Civilian Reserve Air Fleet (CRAF) has been called up. What lessons have we learned about the activation of these two forces during this contingency?

General **Johnson**. The major problem we had to overcome during activation of the RRF was break-out delays. Activation and manning of the ships, particularly those in the 5-day readiness category, took longer than planned, with less than half of the vessels being ready for sea within 5 days of their due date. These delays can be attributed to many different factors including shipyard and skilled labor availability, deferred maintenance resulting from the congressional reduction in fiscal year 1990 MARAD appropriations, the experience of ship managers tasked to activate the ships, and our unrealistic expectations regarding our ability to activate a large number (51 of 70) within 5 days. We will be working closely with the Navy and MARAD to improve break-out performance in the future. Once broken out however, we found the operational reliability of the RRF to be excellent, averaging 93 percent through February 1.

We are very pleased with the first ever activation of the CRAF. Unlike the RRF, CRAF aircraft and crews fly in the airlift system on a regular basis, exercising the interface between military and civilian assets. CRAF was activated in accordance with concepts and procedures which have been developed in conjunction with CRAF carriers through the years. These concepts are in our current contracts and, by closely following these procedures, we minimized surprises for everyone. Any future call of the CRAF will likely use similar procedures. We have learned some new lessons through this activation and, together with industry, we will mold these into our future concepts and contracts.

Senator NUNN. General Johnson, what changes do we need to make to improve their operation in future operations?

General JOHNSON. To ensure RRF vessels can meet the activation windows we set for them, we need to look at several actions. First, more regular activations such as annual dock trials in coordination with maritime labor unions would exercise our ability to rapidly activate these ships. Such a program would also build a pool of mariners familiar with the aging equipment found on most RRF vessels and provide additional job opportunities as an incentive for the declining merchant marine manpower pool. Second, establishing cadre crew manning on select ships would garner a high state of readiness to meet our most critical shipping needs. The cadre crew manning concept provides a nucleus crew familiar with the ship and has been proven on our fast sealift ships. Third, outporting RRF ships near their activation and onload ports would position these ships closer to the Army units that will deploy on them, cutting both deployment and repositioning time.

Funding for RRF maintenance has historically not enjoyed consistent congressional support. Many of the activation problems encountered in Operation Desert Shield can be attributed to the impact of a 63 percent reduction in MARAD's fiscal year 1990 RRF maintenance budget. When Operation Desert Shield/Desert Storm redeployments are complete and RRF vessels are returned to mothball status, two thirds of the fleet will be in excellent mechanical condition. It will behoove us to ensure this high state of readiness is not eroded over the next several years through fiscal neglect.

Finally, we need to review the mix of ships which comprise the RRF. RO/RO ships were critical to rapid onload and deployment of unit equipment, but were in short supply both in the RRF and on the world market. We have recommended to the Chief of Naval Operations that we purchase 21 existing RO/ROs to replace 15 older break bulk ships currently in the RRF.

For the CRAF, because our interface with CRAF carriers occurs on a daily basis, we are continually exercising and refining the contracts and concepts which structure this program. We have not encountered anything in Operation Desert Shield which would lead us to change this well-defined system.

REALIGNMENT OF FUNCTIONS

Senator NUNN. General Johnson, on page 14 of your prepared statement you say, "by becoming the single manager for all common user lift in peace and in war, USTRANSCOM can consolidate traffic management, contract policy formulation, and industrial fund oversight—efforts that are duplicated now by our three components." Do you envision any changes in the current composition of USTRANSCOM and its three component commands?

General JOHNSON. Becoming the single manager for common-user air, land, and sea transportation will modify slightly the current composition of USTRANSCOM. We are seeking additional billets from the services to establish the capability to participate in the development of common user lift traffic management and contracting policy, to establish a financial management office to analyze common-user portions of the service's industrial funds, and to establish a cell to consolidate requirements management for selected peacetime unit moves. The component commands should remain as currently staffed, pending service determination of where the billets we are requesting will come from.

The primary change resulting from our proposal revolves around USTRANSCOM's assumption of peacetime common user lift responsibilities and a corresponding change in where our components derive their authority for common user lift operations—our components will work directly for USTRANSCOM in peacetime as they now do in wartime or during contingencies.

AIRLIFT CAPACITY

Senator NUNN. General Johnson, by all accounts the airlift operations during Operation Desert Shield/Desert Storm have been substantially taxing to the capability of our airlift fleet, both in terms of crew and equipment availability. Secretary Cheney's posture statement (January 1991) states that airlift capability today is 48 million ton-miles per day (MTM/D). Your prepared testimony says that the airlift fleet, "by the end of 6 weeks of operations, had logged more than 700 million ton-miles. . . ." I understand that most all of the organic fleet during this period was dedicated to Operation Desert Shield/Desert Storm. By my calculations, this works out to a capability of about 17 million ton-miles per day (MTM/D). How can we say we have a 48 MTM/D capability when the recent experience of about one third of this capability was so taxing on the system?

General JOHNSON. Yes, it is true that a large portion of our organic airlift fleet, about 85 percent, was dedicated to Operation Desert Shield/Desert Storm. During the first 6 weeks of the operation we did attain approximately 17 million ton-miles per day of delivered cargo to the theater. In January we surpassed even that figure, averaging over 21 million ton-miles per day. The 48 million ton-miles per day capability figure you mentioned refers to a fully mobilized force including almost half of the KC-10 fleet utilized in a pure cargo role and all three stages of the CRAF activated. We never activated CRAF Stage III during Operations Desert Shield/Desert Storm nor did we use our full complement of KC-10s in the pure cargo role. We also did not deem it necessary to call up all Guard and Reserve aircrew and maintenance personnel to support the operation. This decision to limit activation was based on a desire to minimize the number of Guardsmen and Reservists called to Active duty and in consideration of offload constraints in the theater of operations. Additionally, organic airlift aircraft were also required to support high-priority missions in other areas of the world. The combination of these factors led to a 100 percent commitment of the organic airlift fleet. I am proud to report that the airlift system is performing as advertised—providing timely, critical support to forces in the field.

SERVICE LIFE OF AIRLIFT ASSETS

Senator NUNN. General Johnson, the C-17 program continues to have difficulties and won't be available in large number to replace the C-141s until the end of this decade. Is there enough service life left in the C-141 to avoid a shortfall in airlift until the C-17 is fielded in quantity?

General JOHNSON. The C-141 fleet currently has adequate service life to avoid a drop in airlift capability as we bring on the C-17. Of course, our plans are based upon the C-17 schedule in the current President's budget. We are carefully managing the transition to the C-17 to ensure we can continue to provide the National Command Authorities with this critical capability.

Senator NUNN. General Johnson, if there is another emergency that requires a Desert Storm-type airlift operation again, will the C-141s have sufficient service life if there is no service life extension program?

General JOHNSON. Yes, I am confident the C-141s could support another Desert Storm-type airlift operation provided we continue with our current modification and repair programs. Although the C-141s flew from two to four times their normal peacetime usage, the high altitude and steady cruise mission profiles flown in support of this operation were less stressful on the airframe. Our normal training to maintain readiness includes low level, airdrop, and heavyweight aerial refueling training which are more stressful. These lower stress missions minimized the impact on service life, and the modifications and repairs already programmed will carry us through as we transition to the C-17.

Senator NUNN. General Johnson, with the C-17 program slipping, are you willing to accept a reduction in aggregate airlift capability as C-141 aircraft retire before they can be replaced by new C-17 aircraft?

General JOHNSON. No. Any further slippage in the C-17 program is of great concern to me due to its implications on C-141 service life. The C-141 fleet is rapidly approaching the end of its 45,000 hour service life. We need the C-17 on board to replace the capability lost once we are forced to begin retirement of the C-141. The Nation should be unwilling to accept a reduction in aggregate airlift capability and I am pleased the Air Force and OSD have seen fit to link C-141 retirements to C-17 deliveries on an approximate one-for-one basis. We need to ensure that strategic airlift capability is available to rapidly project conventional power in defense of this Nation. Secretary Cheney made it clear in his testimony last April that we need to maintain a minimum level of airlift capability to support our national objectives.

Operations Desert Shield/Desert Storm have once again demonstrated the wisdom of that decision.

HEALTH OF THE MARITIME INDUSTRY

Senator NUNN. General Johnson, you have now had an opportunity to study the maritime industry in-depth during the past 7 months. You probably know more about this industry than any Air Force officer in the world. Your testimony contains a somber assessment of the health of the maritime industry. You note that projects that our merchant fleet will drop from 168 militarily useful dry cargo ships today to 35 ships by the year 2005. You state, "this decline, if unchecked, will force us to reevaluate the role the U.S. merchant marine can play in our national defense strategy." You state that we need to make a concerted effort to revitalize this industry. What steps do you think should be taken?

General JOHNSON. I am neither an expert on what it takes to run a profitable shipping business nor am I a world economist. I am, however, an expert on defense transportation requirements. The decline of the U.S. merchant marine is a concern because, in my opinion, we will never have an organic sealift fleet large enough to support all our deployment needs, nor should we attempt to; it would be too expensive to acquire and maintain. But no matter how large an organic fleet we build, we must still rely on our merchant marine for the seamen to crew those vessels. We must, therefore, be able to rely on our own commercial merchant marine or risk dependence on foreign shipping for our force projection capability.

As to specific recommendations on ways to revitalize the merchant marine industry, I believe we must turn to agencies outside the Department of Defense, and to the industry itself. Are operating and construction subsidies the right answer? Would relaxing the laws which restrict the operators' ability to compete in the free market system help? Perhaps restoration of the tax incentives repealed by the Tax Reform Act of 1986? What effect would penalties or tariffs have on foreign shippers who use subsidies to artificially lower their operating costs? Or increased research and development to improve efficiencies both in ship and shipyard design? These or any other steps taken to revitalize the merchant marine will take close coordination between shipbuilders, liner operators, labor unions, the Department of Transportation, other government agencies, and you, Members of Congress. We were fortunate in Operation Desert Shield to have had 5½ months to mobilize into a benign environment with the help of several foreign nations. We may not be so lucky next time.

READY RESERVE FORCE SHIPS

Senator NUNN. General Johnson, you note that there are 96 vessels in the Ready Reserve Force, and only 65 were made ready for sea. What happened to the remaining third of the fleet?

General JOHNSON. The decision to activate RRF vessels was based on two major factors; the utility of various ship types to meet deployment requirements and the availability of that ship type on the open market. We did not activate the remainder of the RRF because we did not need them for this deployment. These remaining ships were mostly break bulk vessels and tankers. It would not have been cost effective to spend $1.5 to $2 million to activate these RRF ships, and another $2.5 million or so to lay them up, when we could charter similar ships for $10 to $30 thousand per day.

The RRF tankers could be extremely useful, in some other scenario, but were not needed for Operation Desert Shield/Desert Strom because of the easy access and plentiful supply of POL in the theater of operations. We do believe there are too many break bulk ships in the current RRF mix and will seek to correct that problem pending the results of the mobility requirements study.

Senator NUNN. General Johnson, you also note in your testimony that 30 percent of the vessels missed their activation schedules by 10 days or more. If that 30 percent is combined with the ships that were never activated at all, it would seem that only half of the Ready Reserve Force performed as we thought it would. What policy alternatives are you considering to improve the responsiveness of the RRF?

General JOHNSON. As I mentioned earlier, the decision to only activate 65 RRF ships was not based on the readiness of the remaining ships but rather on our ability to meet the sealift requirement through other means. Operation Desert Shield has, however, substantiated the existence of problems in our ability to activate large numbers of RRF ships within prescribed time frames, and those problems will only grow worse as the U.S. maritime industry continues to decline.

There are several actions we believe will help ensure the RRF can be activated in a more timely manner. Annual dock trials of all ships, cadre manning to improve maintenance, more activations for use during JCS exercises, and a review of outporting locations are some of the concepts we are studying. But these actions cannot address the root problem I am concerned about: the continued decline of the U.S. maritime industry. This decline is a threat to our ability to transport combat power by sea, and yet I and the Department of Defense are not in a position to effect any marked change in this decline.

I believe if the U.S. maritime industry is to once again become a power in the world market, we, as a nation, must dedicate ourselves to the rebuilding of this capability. It will require a concerted and coordinated effort between Congress, the administration, and the industry itself to fully implement the national security sealift policy and bring about this revitalization. In the meantime, we will continue to support expansion of our organic fleet to meet sealift requirements, continue to explore concepts designed to ensure sufficient numbers of seamen are available to crew those ships, and continue to voice our deep concern over the impact our declining maritime industry has on the defense of this Nation.

AGE OF SHIPS IN THE READY RESERVE FORCE

Senator NUNN. General Johnson, you note that the average age of the ships in the Ready Reserve Force is 24 years. As you look at ship availability over the next 10 years, what is happening to the composition and average age of the RRF?

General JOHNSON. The age and condition of RRF ships do give me some concern. As our experience in Operation Desert Shield demonstrates, these vessels are vital to our ability to transport large quantities of materiel by sea, having moved nearly 30 percent of all dry cargo transported to the Gulf region.

Operation Desert Shield has demonstrated the need to revise the composition of the RRF. Roll-on/roll-off (RO/RO) ships are the desired means to transport unit equipment because of their capacity and ease of loading. We discovered very early in the deployment that there were not enough RO/RO ships available either in the RRF or from the commercial market to meet our requirements. Accordingly, I have recommended to the Chief of Naval Operations that 21 existing RO/ROs be purchased for the RRF, replacing 15 of the older break bulk ships. This action will still leave available our newest, most capable break bulk ships to carry ammunition and to augment the Navy's combat logistics force, while increasing our RO/RO capability and reducing the average age of the RRF.

I have also recommended that ships purchased for the RRF be modern diesel powered ships, rather than steam powered, to ensure RRF ships conform more closely to current industry standards. By building a more modern fleet we will improve our ability to maintain the ships and more easily man the ships during activation by personnel with current engineering training and experience.

Senator NUNN. General Johnson, are we replenishing the Ready Reserve Force fleet to replace the aging ships?

General JOHNSON. We are taking steps in that direction. The Navy's acquisition strategy for adding ships to the RRF is to purchase only ships built after 1975. This strategy, along with the replacement of older break bulk ships with newer RO/ROs, will work us toward a fleet of newer, more capable ships. This process will, of course, take time. The number of ships ultimately purchased depends on the availability of the required types of ships and funding available to purchase, upgrade, and maintain the ships. Congressional support to fully fund the fiscal year 1991 MARAD RRF procurement and maintenance budget is greatly appreciated. That funding significantly improved RRF ship availability after October 1, 1990 by allowing "test" activations in advance of actual vessel call-ups.

ACTIVATION OF READY RESERVE FORCE SHIPS

Senator NUNN. General Johnson, in 1989 the head of the Maritime Administration (MARAD) and the Commander of the Military Sealift Command (MSC) testified before the House Merchant Marine Subcommittee that there were probably too many ships in the 5-day readiness category. They promised to review the needs for having certain ships in each of the 5-, 10-, and 20-day readiness categories. In your judgment, were there too many ships in the 5-day readiness category?

General JOHNSON. Yes, based on Operation Desert Shield/Desert Storm, there were too many ships in the 5-day readiness category. However, Operation Desert Shield is only one of several possible conflict scenarios. We are therefore advocating a reexamination of the number and types of ships placed in each readiness category. This reexamination would include all scenarios and tie readiness directly to requirements garnered from operational plans.

Senator NUNN. General Johnson, has the review by MARAD and MSC been accomplished?

General JOHNSON. Yes, the MSC/MARAD review has been completed but the results have not been promulgated. The review was based on a pre-Conventional Forces Europe (CFE) force structure. The mobility requirements study will update the MSC/MARAD review to determine RRF readiness requirements based on projected future force structure and Operation Desert Shield/Desert Storm experience.

Senator NUNN. General Johnson, what has the experience of the recent RRF activation told us in terms of putting ships in each of the readiness categories?

General JOHNSON. Operation Desert Shield/Desert Storm has pointed to the need for a thorough review and overhaul of the readiness category structure. This process was begun last spring with the MSC/MARAD review and will conclude with the mobility requirements study (MRS). Placing the appropriate number and types of ship in each readiness category must take into account the needs of the warfighting CINCs, the time needed to prepare units to move, the flow of materiel to the ports, and the availability of other sources of shipping like the FSSs and U.S. Merchant Marine. As a result of Operation Desert Shield, we now have recent, real-world data and experience in all of these areas and will be able to more accurately determine the appropriate composition and numbers of ships for each readiness category. We will also review the readiness categories themselves to determine if 5-, 10-, and 20-day categories are appropriate.

Senator NUNN. General Johnson, were Army units ready to be loaded when ships were available?

General JOHNSON. In most cases, Army units were ready to be loaded at the time ships were available. A single exception occurred during mid-November at the beginning of the second deployment phase. In preparation for these movements, USTRANSCOM staged vessels at appropriate ports in Europe and CONUS. The commencement of the deployment was delayed 1 week per Presidential directive. When the deployment did commence, it took from 10 days to 2 weeks to flow the deploying forces to ports for loading.

CURRENT INTER-THEATER AIRLIFT ISSUES

Senator NUNN. General Johnson, the Military Airlift Command has just completed an airlift "that has surpassed an effort of any air deployment in history." Nevertheless, your testimony estimates how much more equipment and forces might have been deployed had the Air Force had the C-17 in place of the C-141. Can you tell us what equipment or forces the C-141 and C-5 aircraft could not deliver that CINCCENT needed to be delivered?

General JOHNSON. The C-141s and C-5s delivered all of CINCCENT's air transportable equipment needs. The advantage the C-17 would bring to an operation like Operation Desert Shield/Desert Storm is not in the type of equipment it can carry, but in the time required to deliver that equipment. The C-17's unique capabilities would allow it to either deliver its cargo up to 35 percent faster than the C-5s and C-141s or deliver more cargo over a given period of time. We call this throughput. As you can imagine, both of these advantages are very valuable to the ground commander facing an enemy force and in part explains the Army's strong support of the C-17 program.

Senator NUNN. General Johnson, we also understand that if the C-17 had been available, there would have been one additional airfield that could have been used on the inter-theater leg of the operation. If this is true, how much difference would this have made in the deployment?

General JOHNSON. The C-17 would have allowed us to use at least one additional airfield on a routine basis for the strategic airlift flow. The C-5 could also land there but its size and limited ground maneuverability, combined with the restrictive airfield environment, made routine C-5 operations there very difficult and inefficient. With the C-17, this one field would have added about 10 percent to our throughput capability.

SPECIAL OPERATIONS COMMANDS IN THE WAR

Senator NUNN. General Stiner, like some of the other unified commands, the U.S. Central Command has a component command for Special Operations Forces. What were the respective roles of this component command for Special Operations Forces? What were the respective roles of this component command and your unified command during Operation Desert Shield and Operation Desert Storm?

General STINER. Central Command, along with Atlantic Command, Pacific Command, European Command, and Southern Command, each has a sub-unified Special

Operations Command. These theater Special Operations Commands (which are funded under Major Force Program 2 vice Major Force Program 11) function as SOF command and control Headquarters for Combatant CINCs in contingencies and wartime missions. U.S. Special Operations Command trains and sustains the Special Operations Forces funded under Major Force Program 11 which are allocated to the theater Special Operations Commands of the regional CINCs during crises. The sole exception to the rule are those cases where the National Command Authority (the President and/or the Secretary of Defense) directs USCINCSOC command and control of wartime or contingency operations with his assigned forces. In the case of Desert Shield/Desert Storm, USCINCSOC provided forces to SOCCENT (Special Forces Command CENTCOM), which took command of those forces for execution of Special Operations missions as determined by General Schwarzkopf. In addition to SOCCENT, CINCEUR deployed his Special Operations Command (SOCEUR) to Turkey with forces from his theater as well as those provided from the U.S. SOCEUR supported General Schwarzkopf with a Joint Special Operations Task Force. There were also other forces deployed forward as a third Joint Special Operations Task Force. They were assigned strategic SOF missions as determined by both General Schwarzkopf and General Powell. In summary, USCINCSOC provided the forces for execution of missions as determined by CINCCENT and CJCS. Hence, the role of Commander in Chief, Special Operations Command in Desert Shield/Desert Storm was that of a supporting CINC. Finally, USCINCSOC provided the Naval Special Operations Warfare units which supported Commander 7th Fleet (fleet SEAL mission). All Command and Control arrangements worked well and our SOF forces performed superbly.

Senator Nunn. General Stiner, how well did this relationship work?

General Stiner. As a supporting CINC, I provided Special Operations Forces (SOF) to USCINCCENT in support of a wide spectrum of missions relating to Desert Shield/Desert Storm. Utilizing his own Special Operations sub-unified command (SOCCENT) to Command and Control assigned SOF, USCINCCENT effectively utilized SOF in his campaign. The relationship was executed successfully and worked very well.

Senator Nunn. General Stiner, has the war caused you to think that we should consider any changes to the duties and authorities that the law assigns to the U.S. Special Operations Command?

General Stiner. I believe the present structure is just about right. The functions and responsibilities of the Special Operations Command can be addressed in two broad categories. As the principal function of the command, we are assigned certain unique responsibilities for preparing Special Operations Forces to carry out assigned missions. In this capacity, we are more service-like in organizing, training, and equipping the forces, and we execute these responsibilities with budget and acquisition authority. Additionally, we exercise all responsibilities of a unified combatant command, and if directed by the President or Secretary of Defense, we are prepared to execute selected special operations missions as a supported unified command. The law specifies that unless otherwise directed by the President or the Secretary of Defense, special operations activities and missions shall be conducted under the command of the unified combatant commander in whose geographic area the mission or activity is to be conducted. The present unified command structure and division of service responsibilities permit combatant commanders to concentrate on contingencies and warfighting, while the services and supporting CINCs fulfill sustainment and support functions.

GOLDWATER-NICHOLS ACT AND LAW ON SPECIAL OPERATIONS COMMAND

Senator Nunn. General Stiner, you have now been Commander in Chief of the U.S. Special Operations Command for almost a year. From your point of view, how well are the Goldwater-Nichols Defense Reorganization Act and the law that established your command working?

General Stiner. From my perspective, each of these provisions is working well. While interconnected, these issues deserve a separate overview. Perhaps better than any nation before us, the United States has achieved a workable balance between war preparation, execution in conflict, and civilian and executive oversight of the process. In response to the warfighting requirements of the regional CINCs, the services are executing budget and acquisition responsibilities with service Secretary and congressional oversight. Communication flows between the CINCs and the National Command Authorities via the Chairman. The Secretary of Defense directs supporting relationships between the CINCs, and the services fulfill support and sustainment functions. This process was functioning prior to Desert Storm and served us well in preparation and execution.

With respect to the laws establishing the Special Operations Command, I have testified previously that we are well on track in execution of these responsibilities. These laws give a single commander the responsibility and authority to validate and prioritize requirements for special operations forces, much the same as the services organize, train, and equip their forces. While still growing and maturing, we have established the basic foundation and structure to carry out these functions. The superb performance of Special Operations Forces in Operations Just Cause and Desert Shield/Storm is testimony both to the laws establishing this command and to Department of Defense reorganization.

LAW ON SPECIAL OPERATIONS COMMAND

Senator NUNN. General Stiner, are there any changes that you would recommend in these laws?

General STINER. I am not aware of any major changes which are required in order to ensure accomplishment of the objectives of those pieces of legislation. However, we have already proposed a minor change to sections 166 and 167 of title 10 which would make it clear that we, as well as the other commanders of combatant commands, could program and expend funds to provide our forces training opportunities with foreign nationals. That proposal is currently in staffing at OMB, and we hope that it will be submitted by the Department of Defense to Congress in the very near future.

QUESTIONS SUBMITTED BY SENATOR ALAN DIXON

C-17S

Senator DIXON. General Johnson, I understand that additional equipment (12 fighter squadrons and 2 light infantry brigades) could have been lifted in the early days of the deployment for Operation Desert Shield if the C-17 had been available. Do you think Congress should increase the number of C-17s that are authorized to be purchased over the next 5 to 10 years?

General JOHNSON. The current program to buy 120 aircraft is based on the need to replace an aging airlift inventory. The mobility requirements study is looking at total mobility requirements including airlift. When this study is complete, we should be able to readdress the number of C-17s required.

C-130S

Senator DIXON. General Johnson, there are those in Congress who feel that all operations performed by the C-130s should be done by the Air National Guard and Air Force Reserves. Given your experience now with Operation Desert Storm/Desert Shield, do you feel the airlift mission could have been done as well if all C-130s were in the inventories of the Air National Guard and Air Force Reserves?

General JOHNSON. The Air National Guard and Air Force Reserves certainly performed admirably in Operation Desert Shield/Desert Storm, but after careful analysis I cannot support this proposal. I am convinced it would constrain our ability to quickly and adequately respond to future contingencies. Active duty forces provide flexibility and immediate response while, in conditions of mobilization, the Guard and Reserve forces provide for a robust cost-effective force. For example, tactical airlift assets clearly played significant roles in operations Urgent Fury, Just Cause, and Desert Shield/Desert Storm. Because of the availability of the Active force, we were able to respond quickly, without having to mobilize, and thus forewarn our adversaries. Additionally, MAC provides critically important joint training for the Army. The Active force has the time available to support this requirement while the Guard and Reserve do not.

Our current total force mix works well because we exploit the strengths of each component. We have crafted an integrated, balanced airlift system designed to allocate resources equitably on a global basis. As single manager for transportation, I believe we will lose this synergism if we force the Guard and Reserve to assume full responsibility for manning, flying, and maintaining an entire weapon system. In addition, we will surely undermine the cost benefits garnered through the current relationship.

We also need to consider the impact of this transfer on the Nation's ability to wage war. For example, USTRANSCOM C-130s are placed on alert to support USSOCOM at a moment's notice, responding to contingencies without recalling Reserve forces. USSOCOM could not operate effectively without this responsive support from USTRANSCOM. MAC also provides highly experienced C-130 aircrew members to USSOCOM and the Guard and Reserves. Should this transfer take place, that pool of experienced crew members would dry up, thus constraining our special operations and Reserve components ability to rapidly train new crew members in a cost effective manner.

Senator DIXON. General Johnson, do you anticipate that the size of the Active C-130 force will be reduced, particularly in the United States?

General JOHNSON. We do not anticipate or desire a significant reduction in the Active duty C-130 force. In fact, the Air Force decision to buy C-130Hs will allow us to upgrade the Active force. We welcome this upgrade because it is important for us to retain a sufficient capability to respond quickly and adequately to future contingencies, as well as humanitarian assistance requirements, without having to mobilize.

Next, in order to fully support European and Pacific theater requirements, we must permanently station Active duty C-130s in those theaters as well as rotate other units through on a temporary duty basis. We require a sufficient CONUS Active duty C-130 manpower pool to support our overseas C-130s, without causing retention problems which result from excessive overseas duty.

Additionally, as I mentioned earlier, MAC provides highly experienced C-130 aircrew members to USSOCOM. Without an Active duty pool to draw from, our special operations capability will be constrained. We must also retain sufficient airframes and crews to continue our present level of joint training with the Army. The Active force with only 37 percent of the C-130 airframes currently supports 72 percent of this critical joint training.

As you can see, we have significant justification to retain an adequate Active duty C-130 force, especially in CONUS. We do not plan to decrease our ability to meet these requirements.

FAST SEALIFT SHIPS

Senator DIXON. General Johnson, I understand that almost 90 percent of the cargo shipped in Operation Desert Shield went by sealift, and of that cargo, almost 50 percent went by foreign flag ships. What plans do we have for new fast sealift ships to ensure our ability to project our forces without dependence on foreign sealift?

General JOHNSON. Operation Desert Shield has demonstrated the value of additional organic strategic sealift ships. While the amount of dry cargo moved to the Persian Gulf by allied and friendly foreign flagged ships was actually only 25 percent, we may not receive such wide-ranging international support in future deployments. The continued decline of the U.S. Merchant Marine has compelled us to enhance our organic sealift capability, and Congress has supported this need by appropriating $1.5 billion for this effort over the past 2 years.

We are currently working with the Navy as they develop a strategic sealift program to build new sealift ships as outlined in last year's defense authorization bill and, through the mobility requirements study being completed by the Joint Staff, to define the sealift ship requirement. Our own preliminary study indicates a need for diesel powered RO/RO ships with a 200,000 square foot capacity. These ships should be capable of sustaining a 25 knot cruise speed for 12,000 nautical miles. In addition, they should be configured with a stern ramp with slewing capability, adjustable for tidal variations, and port and starboard ramps to reduce load time and allow for logistics-over-the-shore operations.

The definitive requirement for new sealift ships, as well as airlift aircraft and prepositioned forces, will be derived through the mobility requirements study, due for completion this fall.

Senator DIXON. General Burba, Section 903 of the National Defense Authorization Act for Fiscal Year 1991 directed the Secretary of the Army to establish the United States Army Reserve Command as a major subordinate command of U.S. Forces Command. Can you update the committee on the status of this new activity?

General BURBA. Establishment of a fully operational U.S. Army Reserve Command (USARC) has progressed substantially since enactment of the National Defense Authorization Act for Fiscal Year 1991. On October 1, 1990, the command was activated as a provisional command which gave it not only structure, but also provided an official basic core group of personnel to develop and guide the command to a fully operational status. Next, a very comprehensive plan of action was developed which put into place definitive steps for the build-up of mission responsibilities as well as increasing the size of the new command.

Since the new USARC will be assuming most of the mission and command/control responsibilities currently exercised by the continental U.S. Armies (CONUSA), a restructuring of these commands was also needed. Plans have been developed and initiated to cross-level resources and support transfer of missions and functions between USARC and CONUSA.

Plans and actions continue for the USARC to assume the 4th U.S. Army mission and command and control of its subordinate units by October 1, 1991. Specific missions currently being performed by HQ FORSCOM staff will be transferred to the USARC during this same period. Original planning requires that transfer of functions for the remaining CONUSA would occur by October 1, 1992. Actions to support these plans are on schedule, but support for Operation Desert Storm and demobilization may cause minor delays. We will still reach the October 1, 1992 deadline, however.

U.S. ARMY RESERVE COMMAND

Senator Dixon. General Burba, when do you expect it to be established?

General Burba. We plan to have the U.S. Army Reserve Command (USARC) in an operational status by September 30, 1991. With the establishment of a provisional command on October 1, 1990 and the assumption of initial missions and functions under way, programmed milestones are on target. A critical aspect of the overall establishment of the USARC is the drawdown of CONUSA and the transfer of functions from the CONUSA to USARC. Headquarters, Department of the Army has approved our concept plan for completion of the transfer. USARC staffing should be approximately 280 individuals by the first of October. The only issue that remains is Operation Desert Storm demobilization. CONUSA is playing an important role in bringing our Reserve soldiers back home and releasing then from Active duty. We may, therefore, have some delays in CONUSA downsizing, but I do not believe there will be a delay in USARC becoming fully operational by October 1, 1992. As Operation Desert Storm demobilization requirements firm up, appropriate steps will be initiated to ensure the earliest and continued priority establishment of the USARC as a fully operational command.

Senator Dixon. General Burba, what are the plans to provide facilities for this activity?

General Burba. As an interim solution, the USARC is being housed in a newly renovated facility on Fort McPherson. In a further effort to provide the new command with appropriate facilities, actions have been initiated to look for leased office space. Although existing government-owned facilities would have provided the best solution, research has revealed that no appropriate facility is available in the Atlanta metro area. Analysis of the Total Army Basing Study (TABS) does not reveal a solution to our USARC basing dilemma. In my view, considering all of these factors and other command and control issues, leased space in the short range (2-4 years) is our best solution. We have submitted a request for Title 10 approval. Facility construction has been proposed in the 1994 MCAR program as a possible permanent solution.

Senator Dixon. General Burba, do you believe that this activity ought to be physically collocated with the Forces Command headquarters?

General Burba. Yes. By collocating the USARC with FORSCOM, close and continuous assistance can be provided during the command's period of organization and growth. Collocation can also contribute to establishing essential command relationships that will optimize the readiness of the total Army and enhance the ability of the Army Reserve to contribute to the accomplishment of the Army's mission.

Questions Submitted by Senator John Glenn

COMBAT REQUIREMENTS

Senator Glenn. General Burba, General Stiner, and General Johnson, the Goldwater-Nichols Act states that combatant commanders will advise and make recommendations to the Secretary of Defense, through the Chairman, with respect to the operational requirements of their commands. Will each of you tell the committee what your top priority operational requirements for fiscal years 1992–1993 are, and to what extent these requirements are included in this year's budget submission?

General Burba. My top priority is to maintain a training posture that facilitates the execution of the missions of a supporting CINC in JCS contingencies, land defense of the continental United States, military support to civilian authorities, and mobilization/deployment operations.

Operation Just Cause and Operation Desert Storm clearly demonstrated the vital necessity of a thorough, well-planned, and well-executed joint training and exercise program. In addition to hardened, well-trained units, commanders and staffs must be experienced in joint operations if we are to retain the capability to synchronize the total combat power of all the services at a decisive time and place.

Active forces must concentrate on home-station training at or below battalion task force level. The combat training centers will be used to capacity to synchronize battlefield operating systems in an environment that replicates combat conditions.

Currently, we require the capability to train 33 maneuver battalions at the National Training Center. This mission is based on a requirement to train 24 heavy, 7 light, and 2 contingency-focused battalions per year. At the Joint Readiness Training Center, we intend to train 6 FORSCOM battalions during fiscal year 1992, increase to 9 battalions in fiscal year 1993, and eventually train 15 battalions in fiscal year 1994.

Contingency force training will concentrate on environmental and deployment training objectives that promote their employment on a worldwide basis. This vital training is facilitated, as an example, through the deployment of units for training at the Jungle Operations Training Center (JOTC) in Panama. We plan to train 9 FORSCOM battalions annually in this environment. With full recognition of the changing threat and the possible drawdown of Army force structure, OPTEMPO levels for the remaining force must be maintained at pre-Operation Desert Storm levels to ensure operational capabilities are maintained. The reduced budget guidance for fiscal years 1992-1993 while appearing to fully support training needs, represents severe constraints to training and maintaining a total force and most likely will preclude accomplishing a ready, deployable force due to the volume of cuts in other programs.

The budget submissions for fiscal years 1992–1993 provide minimum funding for Reserve components (RC) training at company level and will provide for annual training (AT) for the RC. These of course are top priority RC requirements. The reduced guidance, however, represents severe constraints to training and maintaining a total force and will adversely impact our ability to maintain the momentum of ongoing training programs. Forces Command initiatives, such as the RC Training Development Action Plan (TDAP) which sets the tone for improving RC readiness, are funded during the fiscal years 1992–1993 period; however, it is at the expense of ongoing programs. These are critical initiatives designed to improve the readiness of the RC and include: a completely revised officer and NCO's educational systems; increased emphasis on improving facilities and training areas for RC units; and increased full time support.

Reduced funding guidance also means that new missions, though absolutely necessary, have little chance for success in the competition process. Training at mobilization stations, particularly of combat units, was altered and refocused on basic fundamentals beginning with soldier and leader competency. The resulting success made it clear that the concept which begins with the basics and builds toward small unit proficiency is the solution the Army needs for the RC.

A prototype of this process will be evaluated at Fort McCoy, Wisconsin this June. We expect it to capitalize on the experiences of Operation Desert Storm. Concept expansion, though necessary, will fight for a share of significantly reduced resources.

My second priority is the employment of forces and conduct of operations, in accordance with law, to support law enforcement agencies (LEA) and cooperating with foreign governments to counter the flow of illegal drugs across U.S. borders with priority to the southwest border. Operational requirements in support of counterdrug missions are on-going with no significant changes anticipated for fiscal years 1992–1993. Requirements have been submitted for inclusion in the Department of Defense budget.

The modernization of strategic air and sealift is of significant operational importance to Forces Command. The Department of Defense mobility requirement study will define our strategic lift requirements. Once those needs are identified, funding for strategic lift programs will be addressed by the responsible services.

General **Stiner**. The United States Special Operations Command has two paramount priorities. The first is to take the U.S. Army, Navy, and Air Force units assigned to USSOCOM and maximize their combat readiness to accomplish any mission our country may require of us in the future. To achieve this goal, which requires highly trained and motivated personnel superbly led and equipped with SOF unique equipment, will require continued congressional assistance and support. We must be provided the resources to develop new equipment that meets our validated needs while continuing to upgrade our present systems. Some examples of our high priority requirements are: low probability of interception/detection communication equipment to improve the survivability of our deployed teams; the need to improve our operational capability to infiltrate and exfiltrate our units by sea and air vehicles; and to continue to improve our capability to provide near real-time intelligence support to our deployed operational elements.

The second imperative is, in coordination with the regional combatant CINCs, to ensure that SOF forces are employed to the maximum extent possible to support regional foreign defense programs in order to take greatest advantage of their inherent capabilities to train, advise, and assist the governments of friendly host nations who are facing a multitude of problems. As you know, USSOCOM submits its own budget to the Department of Defense just like the services. The fiscal year 1992–1993 budget request adequately supports my top priority operational requirements as outlined above.

General JOHNSON. USTRANSCOM's top operational requirements are to continue procurement of the C–17 cargo aircraft and to acquire additional militarily capable roll-on/roll-off ships. At this time, the Air Force budget submission fully supports our planned procurement and research and development schedules for the C-17. The Navy budget submission allocates $201 million for sealift procurement in fiscal year 1993, in addition to the $1.275 billion mandated by Congress from fiscal years 1990 and 1991.

MILITARY FORCE PACKAGES

Senator GLENN. General Burba, the Chairman of the Joint Chiefs of Staff, General Powell, recently testified before this committee on the proposed establishment of four military force packages: Strategic Forces; Atlantic Forces; Pacific Forces; and Contingency Forces. What role do you envision for your U.S. Forces Command in these military packages?

General BURBA. It is still too early to define any changes to Forces Command emanating from the Chairman, Joint Chiefs of Staff's four military force packages. The concept is still in the preliminary formulation stage; however, as it continues to develop we, with the other unified and specified commands, will participate in the design of the force packages.

ROLE OF GUARD AND RESERVE

Senator GLENN. General Johnson, by all accounts the Reserve and National Guard personnel played a very key role in the delivery of equipment and personnel to the Persian Gulf. The activation of these personnel has obviously placed a strain on them and their families. Do you see any problems on the future recruiting and retention of Reservists and National Guardsmen—many of whom do not have mandatory service obligations?

General JOHNSON. No, Senator, I don't. Words alone cannot express my admiration and appreciation to the Reserve and Guard forces for their rapid response in being called to serve and their selfless contribution in support of the Persian Gulf conflict. The fact that a significant number of our Reservists and Guardsmen have expressed a desire to stay the course speaks to their commitment and the pivotal role they play alongside the Active force.

Certainly, the military services must rethink recruitment issues such as single-parent families and families where both parents are subject to call-up. Although there are mechanisms, both in the Active and Guard/Reserve force, to deal with problems in these areas, the reality of short-notice recalls may require a reevaluation of recruiting policies.

Overall, I think recruitment and retention will remain healthy. I believe our Guardsmen and Reservists, buoyed by the overwhelming support of the American public, are proud to have served. For many, Operation Desert Shield/Desert Storm culminated years of unheralded service to their country. In my estimation, their positive and lasting contributions represent a true affirmation of our total force policies.

Senator GLENN. General Johnson, does the fiscal years 1992/1993 budget make any adjustments to the force structure of the Transportation Command? If so, what are the changes and what are they based on?

General JOHNSON. During fiscal years 1992 and 1993, USTRANSCOM will build toward activation of the first C–17 squadron, although its initial operational capability will not be achieved until the fourth quarter of fiscal year 1994. We will also begin to deactivate one Active component C– 14 squadron, and three Reserve component C–130 squadrons will convert to C–141s. These changes are based on force modernization requirements, the fielding of the C–17, and the closure of Norton Air

Force Base. There are no force structure changes planned for the Military Sealift Command or Military Traffic Management Command during the next 2 fiscal years.

Questions Submitted by Senator Richard C. Shelby

OFFSHORE PRE-POSITIONING

Senator **Shelby**. General Johnson, Secretary Cheney has spoken in recent days about the possibility of pre-positioning U.S. equipment and materiel in the Middle East in the aftermath of Operation Desert Storm. An innovative concept in this regard has been brought to my attention in the last few weeks. It concerns the offshore pre-positioning of heavy equipment and supplies, on 500 x 300-foot platforms, linked together to form a floating depot for our Armed Forces. This depot could be configured and designed to house as much as a division of heavy armor and materiel that could be maintained by a small cadre of men during peace-time and made ready for rapid deployment at the outset of emergency mobilization. Has USTRANSCOM looked into this concept of offshore pre-positioning of heavy equipment and materiel?

General **Johnson**. USTRANSCOM is keenly interested in the afloat pre-positioning of equipment and materiel and the proven impact pre-positioning has on our ability to rapidly deploy forces to a region of conflict. We have not looked specifically at proposed new design concepts such as the afloat pre-positioning platform you described. We are presently scheduled to receive a briefing on this concept by J.W.G. Associates on March 27, 1991.

Senator **Shelby**. General Johnson, the Department of Defense is currently in the midst of conducting the mobility study mandated by the committee last year. Could you give this Senator the assurances that you will incorporate an analysis of the floating offshore pre-positioning concept in that mobilization study?

General **Johnson**. As required by the Fiscal Year 1991 National Defense Authorization Act, the Mobility Requirements Study (MRS) will address all facets of mobility, including pre-positioning ashore and afloat. USTRANSCOM intends to be involved in all portions of the analysis and expects pre-positioning to be a key issue in the scenarios to be examined. The results of this analysis, not only for pre-positioning but for all aspects of mobility, will define our mobility requirements in the form of standard units of measure such as tons, square feet, million ton-miles per day, etc. These requirements will then be translated into the appropriate vehicles to fill that requirement. Analysis of new concepts falls outside the purview of the MRS.

Senator **Shelby**. General Johnson, could you also address the possibility of the Saudis or Kuwaitis or other Middle East friendly nations contributing financially to the development of this alternative to pre-positioning of equipment and materiel following Operation Desert Storm?

General **Johnson**. This is a question more appropriately answered by others.

Questions Submitted by Senator William S. Cohen

READY RESERVE FORCE

Senator **Cohen**. General Johnson, in your prepared testimony you said that when the Ready Reserve Force was activated, 30 percent of the vessels missed their activation targets by 10 or more days. You go on to say that the RRF concept is sound; and then you express concern over the declining pool of trained labor to operate these ships. What exactly do you mean when you say the RRF concept is sound?

General **Johnson**. Operation Desert Shield was the first ever large scale activation of the RRF. We have shown that we can activate large numbers of ships maintained for an extended period of time in a reduced operating status, employ those ships in a massive military deployment, and count on those ships to operate at a high reliability rate.

The concerns I address in my statement do not invalidate the concept of a fleet of reserve sealift ships. They do however, point to areas which need attention if we are to improve and maintain this very valuable transportation capability.

Senator **Cohen**. General Johnson, what changes do you think should be made to the composition, organization, or management of the RRF?

General **Johnson**. As I've discussed, we need to look at several actions. First, more regular activations such as annual dock trials in coordination with maritime labor unions would exercise our ability to rapidly activate these ships. Such a program would also build a pool of mariners familiar with the aging equipment found on most RRF vessels and provide additional job opportunities as an incentive for the declining merchant marine manpower pool. Second, establishing cadre crew manning on select ships would garner a high state of readiness to meet our most critical shipping needs. Cadre crew manning provides a nucleus crew familiar with the ship, a concept proven on our fast sealift ships. Third, outporting RRF ships near their activation and onload ports would position these ships closer to the Army units that will deploy on them, cutting both deployment and repositioning time.

We are also analyzing the mix of ships currently in the RRF. Our preliminary findings, based on Operation Desert Shield data, indicate the RRF is heavy in break bulk ships and light on RO/ROs. We have recommended purchasing 21 existing RO/ROs from the world market while eliminating 15 of the older break bulk ships from the RRF. The Mobility Requirements Study due for completion this fall will further quantify the number and type of ships best suited for the RRF. The RRF has played a major role in Operation Desert Shield delivering nearly 30 percent of the total cargo moved by sea—over 600,000 tons in 116 voyages. In fact, without the RRF we could not have met General Schwarzkopf's deployment requirements as quickly as we did. The RRF is the largest portion of our U.S. organic sealift fleet, and will continue to be a predominant part of our future deployment planning.

ROLL-ON/ROLL-OFF (RO/RO) SHIPS

Senator COHEN. General Johnson, you testified before the House Appropriations Defense Subcommittee on February 26, 1991. Your prepared statement for us today is not exactly the same. In your old prepared statement you said, "we, as a Nation, should make a concerted effort to revitalize the U.S. merchant marine while continuing to develop our organic programs to ensure an adequate sealift response capability." Your new prepared testimony reads (on page 10), "we, as a Nation, should make a concerted effort to revitalize the U.S. merchant marine while continuing to develop our organic capability through additional strategic sealift ships, and RRF configured with the proper mix of well-maintained militarily useful vessels, and an adequate afloat pre-positioning force for rapid response. We can begin this effort through a balanced approach of acquiring existing ships from the world market, and constructing 25 knot diesel propelled RO/RO ships in U.S. shipyards." Please elaborate on why you changed your statement.

General JOHNSON. We have recently completed a preliminary study, based on data accumulated through Operation Desert Shield/Desert Storm, which supports this expansion of my earlier statement. We now believe the most cost effective way to acquire the additional organic sealift assets we need is to buy some existing RO/RO ships from the world market and build some new strategic sealift ships specifically designed for military use. The final recommendations of the Department of Defense will be forwarded in the Mobility Requirements Study.

Senator COHEN. General Johnson, do you expect the Mobility Requirements Study will emphasize the need to build more of the RO/RO ships you mentioned?

General JOHNSON. We fully expect the Mobility Requirements Study (MRS) to emphasize a need for large, medium speed RO/RO ships like those I described earlier. The MRS interim report to Congress identifies a sealift shortfall based on the initial analysis results which could be satisfied by additional RO/RO ships that could be used in a common user or pre-positioned role. We believe the study will further conclude that a balanced approach to RO/RO procurement, acquiring existing ships from the world market as well as constructing ships in U.S. shipyards, will be the most prudent means to expeditiously add needed shipping to defense-controlled inventories.

Senator COHEN. General Johnson, what else do you expect the Mobility Requirements Study may say about improving our sealift capability?

General JOHNSON. It is difficult to speculate on the outcome of the MRS before the comprehensive process of mobility requirements, force effectiveness, and cost and risk analysis are complete for each of the scenarios being evaluated. We are confident, however, that the study will show that the RO/RO ships I discussed contribute positively to our capability to respond to any conflict or contingency. Additionally, based on our Operation Desert Shield experience, we expect the study to reinforce our recommendation for significant improvements to the composition and readiness of the Ready Reserve Force (RRF), improving its ability to meet deployment needs of the future.

SELF-DEFENSE FEATURES FOR SEALIFT SHIPS

Senator **Cohen**. General Johnson, the *Arleigh Burke* (DDG–51) class destroyer incorporates various self-defense features in its design, including shaping of superstructures to reduce its radar cross section. Do you believe any special attention should be given to incorporating self-defense features in new RO/RO ships which are built specifically for carrying Army equipment? If so, what features might you especially value?

General **Johnson**. The costs involved in incorporating expensive technology like that of shaping superstructures to reduce radar cross section into the design of new RO/RO ships are likely to be prohibitive. However, other passive and active self-defense modular installations including anti-missile/torpedo systems and nuclear, chemical, and biological defense systems could be considered.

DECLINE OF THE U.S. MERCHANT MARINE

Senator **Cohen**. General Johnson, in your prepared testimony you included some pessimistic predictions about the future of the U.S. flag merchant marine. You say, "MARAD had predicted our U.S. merchant marine fleet will continue to decline, from 168 militarily useful dry cargo ships today to 35 by the year 2005." I have been informed that on January 15, 1991—the day before the allied assault on Iraqi positions in Kuwait—there was a meeting between the director of the Maritime Administration and representatives of labor and management for several U.S. flag shipping companies. As a result of that meeting, the ship operators are convinced that the operating differential subsidy will be allowed to expire, and with it some of the economic incentive to remain under the U.S. flag. In fact, I understand that Lykes Brothers Shipping has now requested permission to re-flag its ships and that other lines like Sea-Land and American President Lines are considering changing the flag for most of their fleets as well. This would all be consistent with the pessimistic predictions of MARAD. What do you think is happening to the U.S. merchant marine? Do you think MARAD is correct in their prediction?

General **Johnson**. The U.S. merchant marine, for a variety of reasons, appears to have lost the ability to compete profitably on the world market. All the evidence leads to the same conclusion: the U.S. merchant marine fleet is declining at a rapid pace. The Denton Commission on Merchant Marine and Defense in July 1988 recorded 176 militarily useful dry cargo ships under U.S. flag, 147 commercial, and 29 under MSC charter. They predicted that in the year 2000, while MSC charters would remain at 29, commercial ships would decline by more than half, to 71, for a total of 100 ships. In March 1990, the Navy requested MARAD update the Denton Commission predictions. MARAD figures for the year 2000 were again 29 MSC charters, but only 51 commercial ships for a total of 80 dry cargo vessels. By 2005 they foresaw 21 commercial and 14 MSC charters for a total of 35 militarily useful U.S. flagged ships. Both the Denton Commission and MARAD predictions assume there will be no changes in regulatory policies or programs, and since none seem forthcoming, there is no reason to doubt this decline will occur.

Senator **Cohen**. General Johnson, in your opinion, what specific actions would be required to turn this situation around, to increase the number of militarily useful vessels in the U.S. flag fleet?

General **Johnson**. I believe you must turn to agencies outside the Department of Defense, and to the industry itself for specific courses of action to revitalize the merchant marine. Are operating and construction subsidies the right answer? Would relaxing the laws which restrict operators and hamper the free market system help? Would restoration of the tax incentives repealed by the Tax Reform Act of 1986 keep ships sailing under the U.S. flag? What effect would penalties or tariffs on foreign shippers who use subsidies to artificially lower their operating costs have? Or increased research and development to improve efficiencies both in ship and shipyard design? Any steps taken to revitalize the merchant marine will take close coordination between shipbuilders, liner operators, labor unions, the Department of Defense, other government agencies, and you, Members of Congress.

Questions Submitted by Senator Trent Lott

EFFECTS OF BASE CLOSURES ON FUTURE OPERATIONS

Senator **Lott**. General Johnson, in your statement you summarize the large amount of materiel and people going through and from Europe to the Persian Gulf. I understand a large percentage of this activity was through bases at Frankfurt, Germany; Madrid, Spain; and Moron, Spain. Military facilities at these locations are scheduled to close under current Department of Defense planning. What will be the effect of these closures on future operations of this nature and how will you work around these closures?

General JOHNSON. Our planned reduction of forward based forces increases the pressure on mobility, making our ability to deploy CONUS units to overseas locations even more critical. The effectiveness of future force-projection capability depends on a solid strategic lift infrastructure in place and in regular use. Any deployment to, or through, areas without this in-place infrastructure will be dramatically slowed, increasing the risk to military combat operations.

Base closures, without access to alternate facilities of equivalent capability, will weaken this infrastructure and negatively impact our power projection capability. We will work to adjust our transportation system to distribute the capabilities lost through base closures to our remaining facilities.

FORWARD STORAGE AND PRE-POSITIONED STOCKAGE

Senator LOTT. General Johnson, are you ready to recommend additional increases and dependence on forward storage and pre-positioned stockage at this time or do you prefer to wait on the mobilization study recommendations?

General JOHNSON. Pre-positioning is the important third leg of the mobility triad, complementing airlift and sealift. While pre-positioning ashore, like POMCUS, is not under my operational control, it very much effects the requirement for strategic lift. Afloat pre-positioning, storing equipment aboard forward-based ships, is part of our sealift force and has worked extremely well in Operation Desert Shield/Desert Storm. Both the Marines' use of maritime pre-positioning ships (MPS) for unit equipment and the Army's storage of ammunition and supplies aboard the afloat pre-positioning ships (APS) were 100 percent effective in their designed task and over 90 percent reliable as common user shipping on subsequent voyages. This success does lead me to believe an expansion of the afloat pre-positioning concept merits consideration. But it is important to remember that to be truly effective, the transportation system must remain in balance, exploiting the strengths of all aspects of mobility. The mobility requirements study will give us the empirical data we need to make informed decisions on the size and shape of our future mobility triad.

FORWARD OVERSEAS MAINTENANCE FACILITIES

Senator LOTT. General Johnson, what is your recommendation for having forward overseas maintenance facilities and contracts to support U.S. deployments, either full-time or emergency actions, such as the Persian Gulf operations?

General JOHNSON. Existing overseas maintenance facilities and contract structures play a vital role in the ability to deploy and sustain U.S. forces throughout the world. During Operation Desert Shield/Desert Storm, overseas facilities for both airlift and sealift provided the flexibility to transport troops and materiel from the United States, Europe, the Indian Ocean, and the Pacific to Southwest Asia. Without this overseas presence, deployment would have been much more difficult and sustainment more tenuous.

RECOVERY OF ADDITIONAL TRAINING COSTS

Senator LOTT. General Burba, in relation to Operation Desert Shield/Desert Storm operations, are the additional training costs incurred going to be recovered as an incremental cost? If not, why not?

General BURBA. All FORSCOM incremental costs directly attributable to Operation Desert Shield/Desert Storm are reported to the Department of the Army. These costs fall into three general categories. The first category includes the cost in CONUS to mobilize, train, and deploy both Active and Reserve units, and conversely, the costs of redeployment and demobilization once the units return to CONUS. This category includes the costs of Reserve units who were activated but not deployed CONUS. The second category is the cost to transport personnel and materiel to and from the Persian Gulf area. The third category includes the operation and maintenance cost for units to train and fight in-country. To date, costs in all categories which include additional training costs, have been borne by the Department as incremental to Operation Desert Storm. Normal training costs of Active component units which did not deploy but remained in CONUS were not included as incremental cost. To the extent that the intensity of their training increased and resulted in higher costs, those costs will neither be reported to the Department of the Army nor recovered as incremental costs.

BENEFITS OR EXCESS PROPERTY PROGRAM

Senator **Lott**. General Stiner, what are the benefits to our Special Operations/Low Intensity Conflict (SO/LIC) programs around the world from the Department of Defense excess property program, particularly in the Third World?

General **Stiner**. We have found it extremely important to be able to provide small items under the security assistance umbrella to accomplish our training objectives with our counterparts. Frequently these items are of little or no value to us, but provide an incremental improvement to the capabilities of our hosts. The subjective value of these transfers, when done in a professional and non-demeaning manner, is incalculable to enhancing a positive image of U.S. resolve and genuine commitment. The Department of Defense excess property program is a supply source for these small items.

Senator **Lott**. General Stiner, Representative Rahall's (D--WV) bill, currently before the House of Representatives, would transfer the Department of Defense non-lethal excess property program to GSA. How would you view the consequences of such a transfer as a military commander?

General **Stiner**. The ability to obtain selected non-lethal excess property provides flexibility to the military commander. This could include meeting internal equipment needs, as well as offering a potential source of equipment for newly emerging mission areas such as Foreign Internal Defense. Our needs are best met by a Department of Defense-managed program and I support our current system.

Senator **Lott**. General Stiner, I am particularly interested in Title 10 Humanitarian Civic Assistance projects conducted in your command and the excess property program. Would you comment for us on the benefits that come to your command from the Department of Defense Humanitarian Assistance Program?

General **Stiner**. USSOCOM participates indirectly in Title 10 Humanitarian/Civic Assistance (H/CA) funded activities and in the excess property program. We are not authorized to receive H/CA monies. We do receive periodic requests from Commanders in Chief (CINCs) to provide troop support for projects the CINCs may be executing somewhere in the world. These projects, for example, may be a road construction program in a South American country or a well drilling project in Southeast Asia.

Through USSOCOM's support to regional CINCs, we receive many benefits; for example, participation in H/CA activities provides a unique in-country orientation opportunity we may not otherwise achieve. Our regionally-oriented language proficiency requirement is enhanced through face-to-face contact with the indigenous population. Our readiness is likewise improved by applying our skills in real-world, mission-relevant situations. Finally, we are afforded an opportunity to build personal and professional relationships with foreign military personnel and civilians, which is an invaluable asset for successfully executing our missions.

[Whereupon, at 4:19 p.m., the committee adjourned, to reconvene upon the call of the Chair.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEARS 1992 AND 1993

WEDNESDAY, MARCH 13, 1991

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

UNIFIED COMMANDS ORIENTED TO REGIONAL DEFENSE

The committee met, pursuant to notice, at 2:02 p.m., in room SR-222, Senator Carl Levin presiding.

Committee members present: Senators Levin, Dixon, Warner, Thurmond, Cohen, McCain, Lott, Mack, and Smith.

Committee staff members present: Richard D. DeBobes, counsel.

Professional staff members present: Richard D. Finn, Jr., Creighton Greene, and John J. Hamre.

Minority staff members present: Romie L. Brownlee, deputy staff director for the minority; Judith A. Freedman, Ronald P. Kelly, George W. Lauffer, John E. Mansfield, Durwood W. Ringo, Jr., and Mark B. Robinson, professional staff members.

Staff assistants present: Kelli J. Corts and Mary J. Kampo.

Committee members' assistants present: Charles C. Smith, assistant to Senator Dixon; Milton D. Beach, assistant to Senator Glenn; Christopher K. Mellon, assistant to Senator Cohen; Philip E. Thoden, assistant to Senator Coats; and Thomas L. Lankford, assistant to Senator Smith.

OPENING STATEMENT OF SENATOR CARL LEVIN, PRESIDING

Senator LEVIN. The committee will come to order.

Good afternoon, everybody. The Armed Services Committee convenes this afternoon to continue its annual series of hearings with our unified and specified commanders.

After two hearings last week, today's hearing will be the third in this series this year. As in previous years, the committee has asked the unified commanders to describe their military strategy, their operational requirements, and the extent to which the defense budget request corrects their critical deficiencies.

The committee also continues to be interested in the implementation within each command of the Goldwater-Nichols Department of Defense Reorganization Act of 1986.

This year, we have asked the unified commanders to address these issues in the context of Operation Desert Storm and the build-down of our military capability. Among the issues that we would like to explore in light of these two developments are the role of each command in supporting the war effort and the implications of Operation Desert Storm for long-term defense plans.

Another area we have been considering in these hearings is the effect that the military force packages, developed by General Powell, will have on the unified commands. General Powell has testified that four basic military force packages and force-supporting capabilities would be needed to implement our strategic concepts and accomplish all of the missions that we require of our forces.

The four basic force packages are Strategic Forces, Atlantic Forces, Pacific Forces, and Contingency Forces. The four supporting capabilities include a transportation capability, a space capability, a reconstitution capability, and a research and development capability.

That sounds like a realignment of the unified and specified commands, and possibly a shift in some roles and missions. The committee will want to hear our witnesses views on how their commands fit into those force packages and supporting capabilities, and what this would mean in terms of roles and missions for their component commands.

At this point, let me welcome the three commanders who will help us to address these important issues today. General George Joulwan, the Commander in Chief of the U.S. Southern Command, Admiral Charles Larson, the Commander in Chief of the U.S. Pacific Command, and General Robert RisCassi, the commander of our forces in Korea.

Gentlemen, thank you, each of you, for taking the time to testify this afternoon. Admiral Larson just assumed command a couple of weeks ago, took over from an outstanding officer, Admiral Huntington Hardisty. I know that all members of this committee would like to extend our appreciation and our best wishes to Admiral Hardisty on the occasion of his retirement, if you would extend those for us.

I realize the unified commands vary to the extent which they were involved in Operation Desert Storm. Nonetheless, I, and I know all members of this committee, want to congratulate all of you on the splendid success of that operation. Everyone in the Armed Forces deserves our thanks and our admiration for the tremendous performance of our military forces.

Senator Nunn and Senator Warner are on the floor with the supplemental defense bill at the moment. Senator McCain and Senator Mack, do either of you have an opening statement?

Senator McCAIN. Thank you, Mr. Chairman. I welcome the witnesses, and Admiral Larson, a special welcome to you. Admiral Larson and I were classmates at the Naval Academy. It shows people that some can do well and some can do badly.

Senator LEVIN. It is clear to us which is which. In case there is any doubt in your mind, Admiral, he is referring to you in the former.

Senator McCAIN. Please give our best regards, as the Chairman has said, to Admiral Hardisty, who did wonderful service in a variety of ways. We welcome our other two witnesses and look forward to hearing their testimony.

Thank you, Mr. Chairman.

Senator LEVIN. Senator Dixon has submitted his statement which will be made part of the record.

[The prepared statement of Senator Dixon follows:]

PREPARED STATEMENT BY SENATOR ALAN J. DIXON

Mr. Chairman, at the outset, I want to say it is good to see the men and women finally coming home from the Gulf, home to the welcome they so rightly deserve as true American heroes.

It is a pleasure to have with us today a distinguished panel consisting of Generals George Joulwan and Robert RisCassi, as well as Admiral Charles Larson.

I look forward to hearing about military strategy and operational requirements they view as necessary for a strong national defense posture in their regions. I am particularly interested in how they view the "Fiscal Year 1992-1993 Defense Authorization Request" and the "Fiscal Year 1992-1997 Future Year Defense Plan" in satisfying their needs. Additionally, I would like to hear their thoughts and ideas on force structure in their specialized areas, since they, along with General Norman Schwarzkopf, will be the leaders who will be in the forefront in any future conflict, should any conflict once again come our way.

With this in mind, I look forward to the testimony of our expert panel.

Thank you, Mr. Chairman.

Senator LEVIN. General Joulwan, we will start with you.

STATEMENT OF GEN. GEORGE A. JOULWAN, USA, COMMANDER IN CHIEF, U.S. SOUTHERN COMMAND

General JOULWAN. I am deeply honored to make my first appearance before you as Commander in Chief of the U.S. Southern Command. Thank you for your support of the Southern Command in particular, and the Armed Forces of the United States in general.

My statement for the record incorporates the details of the objective strategy priorities and assessment of the region. Let me briefly summarize.

First, Mr. Chairman, the past year has been one of unprecedented change. From the events in Europe to the victory in the Persian Gulf, we have seen our national will and our military tested. We have seen the focus of our national military strategy change from global conflict to regional contingencies, and we have seen regional contingencies vary from reliance on predominantly light forces in Operation Just Cause to heavy air, naval, and armored formations in Operation Desert Storm.

That both operations were successful is testimony to the training, structure, and readiness of our Armed Forces. In both conflicts, we learned the value of trained and ready forces. As we now build down the force, it is important to the Southern Command that we retain highly trained and ready forces, and the right mix of forces—units that can rapidly deploy, fight, and win when they get there.

To do that, we require technologically superior equipment, sufficient lift, stressful, realistic training, competent leaders, and above all, top quality, intelligent, dedicated young men and women who serve their country with pride and purpose.

Quality of the force and quality of life go hand in glove. Therefore, at the very top of the priority list of the U.S. Southern Command is the recruitment and retention of the very best young people from our society and a decent quality of life for them and their families.

Mr. Chairman, Central and South America is a region in transition and conflict, where instability is more the rule than the exception, where enormous human and resource potential exist, and most importantly, where U.S. commitment and cooperation are both necessary and vital.

We have historic ties. We share a common border. We also now share a common threat—drug trafficking. Insurgencies continue to plague many countries of the region, and political violence and abuse of human rights are still matters of common concern.

How we as a nation attack these challenges in the upcoming decade will determine the true security of the United States in the 21st century. In this region, tools of government other than military will be necessary: economic assistance, judicial reform, environmental considerations, debt and economic reform.

But, Mr. Chairman, I am optimistic. Where 15 years ago Latin America was dominated by totalitarian regimes, today democracies are emerging. Leaders have an awareness of the need to provide their citizens with freedom, peace, justice, and opportunity.

However, while democracy has expanded in Latin America, in many nations it is also young and vulnerable. Economic stagnation, huge debts, and runaway inflation plague most of these countries. In these conditions, narcotrafficking, insurgency, and political violence flourish and attack the very fabric of a nation and its society.

Southern Command must develop a coherent, coordinated military strategy to address these nontraditional threats, and in developing that strategy, my vision for the region is one of free, stable, and prosperous nations acting in concert with one another to nurture the development of democracy and foster economic growth.

Basically, U.S. Southern Command's concept of operations is to assist host nations in the area in promoting, enhancing, and solidifying the democratic institutions within their countries. To do so, Southern Command must work closely with the Ambassadors and their country teams plus numerous other agencies of the U.S. Government.

Southern Command is also prepared, as it was in Operation Just Cause, to plan, exercise, and execute operations in our theater of operations. As the President pointed out in his August 2 strategy speech, we must focus on rapid response: forces that are in a high state of readiness and forces that are agile and can be employed with great speed, flexibility, and versatility.

To do so requires robust sea and airlift and rigorous training and exercises. Our exercise program includes joint and combined training in the defense of the Panama Canal and other contingencies in the region.

My first priority is to stop the flow of illegal drugs emanating from the region. In providing assistance in fighting the drug war, we do so through the Ambassador and his country team. Clear objectives are set and resources are allocated based on those objectives. Secretary Cheney's guidance to me is to provide intelligence, training, communications, and planning in support of the host nation. We are doing so. U.S. force presence is at a minimum, and no U.S. military forces participate in counter-narcotics operations.

The lead effort is law enforcement and must remain so. Our intent is to strengthen the will and capability of the host nation to fight the counter-narcotics war.

The second priority of the Southern Command is to support our government's effort to bring peace and stability to the nations of Central America. Key to this effort is a resolution of the insurgency in El Salvador as well as ensuring democracy continues to grow in Nicaragua.

My third priority is Panama. One year after Just Cause, Panama continues to make steady progress as a fledgling democracy. Southern Command provides assistance to the Government of Panama across a broad spectrum in conjunction with the Ambassador and the country team. In less than 9 years, the canal reverts to Panama. We are working to create an awareness in the Panamanian Government and private sector of the complexity of this undertaking and are offering assistance and advice. The intent is to develop a Panamanian capability to keep the canal open and neutral now and beyond the year 2000.

My next priority is to develop and maintain effective military-to-military relations with all democratic governments in Latin America. The U.S. military serves as an example of how armed forces operate in a democratic system and what is meant by civilian control of the military. We must do more than provide equipment or training. We must, by our example, impart our ideas, ideals, and values.

As to the Goldwater-Nichols Act, let me say that the Goldwater-Nichols Act is alive and well in Southern Command. The CINC is heard and his views considered by both service staffs and the joint staff. Access is available to the Chairman and the Secretary of Defense, and our components are eager and willing to participate.

Mr. Chairman, let me conclude as I began: that essential to accomplishing our mission in Southern Command will be quality soldiers, sailors, airmen, and marines. We must attract and retain these young people by making them proud to serve their country, by giving them exciting duties, by challenging them, and providing an adequate quality of life for them and their families.

Thank you for your support.

[The prepared statement of General Joulwan follows:]

PREPARED STATEMENT BY GEN. GEORGE A. JOULWAN, USA, COMMANDER IN CHIEF, U.S. SOUTHERN COMMAND

Mr. Chairman, and distinguished members of the Senate Armed Services Committee, I am deeply honored to make my first appearance before you as Commander in Chief, U.S. Southern Command. It is my intention today to discuss the strategic importance of Central and South America to the national security of the United States. In so doing, I will outline Southern Command's military objectives, military force capabilities and the strategy that links those objectives and capabilities. I will also detail the resources needed to accomplish these objectives, state my priorities and outline critical operational deficiencies. In particular, I will address the issues of counter-narcotics, insurgencies and Panama 1 year after Just Cause.

The past year has been one of unprecedented change. From the events in Europe to the victory in the Persian Gulf, we have seen our national will and military tested. We have seen the focus of our national military strategy change from global conflict to regional contingencies. And we have seen regional contingencies vary from reliance on predominantly light forces in Operation Just Cause to heavy air, naval and armored formations in Operation Desert Storm. That both operations were successful is testimony to the training, structure and readiness of our Armed Forces. In both conflicts we learned the value of trained and ready forces.

As we now draw down the force, it is important that we retain highly trained and ready forces. And the right mix of forces. Units that can rapidly deploy and fight and win when they get there. To do so will require technologically superior equipment, sufficient lift, stressful realistic training, competent leaders and, above all, top quality, intelligent, dedicated young men and women who serve their country with pride and purpose. Quality of the force and quality of life go hand in glove. Therefore, at the very top of the priority list for U.S. Southern Command is the recruitment and retention of the very best young people from our society and a decent quality of life for them and their families.

LATIN AMERICA

Latin America is an area which will continue to be vital to the national security of the United States. It is a region in transition and conflict where instability is more the rule than the exception, where enormous human and resource potential exists, and, most importantly, where U.S. commitment and cooperation are both necessary and vital. We have historic ties. We share a common border. We also share a common threat—drug trafficking. Insurgencies continue to plague many countries of the region and political violence and abuse of human rights are still matters of common concern. How we as a Nation attack these challenges in the upcoming decade will determine the true security of the United States in the 21st century. In this region, tools of government other than military will be necessary—economic assistance, judicial reform, environmental considerations, debt and economic reform.

But I am optimistic. Fifteen years ago Latin America was dominated by totalitarian regimes. Today democracies are emerging. Leaders have an awareness of the need to provide their citizens with freedom, peace, justice and opportunity. However, while democracy has expanded in Latin America, in many nations it is still young and vulnerable. Economic stagnation, huge debts and runaway inflation plague most of these countries. In these conditions, narcotrafficking, insurgency and political violence flourish and attack the very fabric of the nation and its society. Southern Command must develop a coherent, coordinated military strategy to address these non-traditional threats.

THREATS

No Latin American nation poses a military threat to U.S. interests. Virtually all countries in my area of responsibility are members of the Rio Pact and the Organization of American States and are friends of the United States. Even Nicaragua has started on the road to democracy. Significantly, the Soviet Union has been cooperative in the region—especially in stemming the flow of sophisticated weaponry from the Sandinistas in Nicaragua to insurgents in Guatemala, El Salvador and Honduras. Although Cuba is not in my area of responsibility, this Communist country still supports insurgency in the region. With the exceptions of Cuba and Suriname, all nations see the future in terms of democratically elected governments which come to power by free and open elections. Insurgencies in Colombia and Peru are causes for concern as they escalate in both level of violence and use of modern weaponry. Most troublesome is the linkage between the insurgencies in both countries and the narcotraffickers.

The narcotics threat is the most serious threat in my area of responsibility. One hundred percent of the cocaine and 35 percent of the heroin consumed in the United States come from Latin America. Billions of dollars are involved. Corruption and violence accompany the narcotraffickers. Not only are narcotics a threat to the people of the United States, but the narcotrafficker has become a direct threat to the national security of the countries of the region. The methods of operation of the narcotraffickers destroy the ideals and values of a free democratic society. In some Latin American nations, judges are bribed, military and police corrupted and honest citizens and farmers are threatened. Over time, the very institutions and structures which promote and guarantee emerging democracies are placed at risk. We see this situation in Colombia today, and the Colombians are fighting valiantly for their national survival. To varying degrees, the inroads made by the narcotraffickers can be seen in other Andean Ridge nations and in several Central American countries. Steps must be taken now to support legitimate governments to reverse the gains made by the narcotrafficking organizations.

Compounding and contributing to this climate are the economic and social conditions existing in Latin America. Debt, outdated economic structures, over urbanization, inflation and high unemployment are problems which threaten the stability of these governments. The narcotraffickers exploit these to operate their multi-billion dollar business. And it is against this interrelated threat of insurgency, narcotrafficking and socio-economic problems that Southern Command must develop a military strategy.

MILITARY STRATEGY

My vision of the region is one of free, stable and prosperous nations acting in concert with one another to nurture the growth of democracy and foster economic growth.

Military Objectives: Specifically, the military objectives of Southern Command are to:

— Ensure an open and neutral Panama Canal.

— Assist host nations to defeat narcotrafficking and stem the flow of drugs into the United States.

— Assist our allies in strengthening peace, security and justice within their borders.

— Support development of the economic and political infrastructure required to provide stability.

— Deter aggression.

— Promote professionalism among the military forces in the region.

In meeting these military objectives, we must assist Latin American countries in developing professional, competent and dedicated military and police forces—forces tailored to the threat, with U.S. training and assistance relevant to the true threat facing these countries. Our efforts must be directed toward strengthening each country's ability to defend itself and enhancing its counter-terror and drug enforcement capabilities. These efforts must be undertaken in conjunction with those of other U.S. Government agencies which provide economic, law enforcement and other forms of assistance.

Concept: Basically, U.S. Southern Command's focus is on assisting host nations in the area of operations in promoting, enhancing and solidifying the democratic institutions within their countries. To do so, Southern Command must work closely with the Ambassadors and their country teams, as well as numerous other agencies of the U.S. Government. As was stated, in the non-traditional threats that face Latin America, our efforts must recognize the social and economic problems facing those countries, as well as internal insurgencies and counter-narcotics. We do so.

Southern Command is also prepared, as it was in Operation Just Cause, to plan, exercise and execute operations in our theater of operations. As the President pointed out in his August 2 strategy speech, we must focus on rapid response—forces that are at a high state of readiness, and forces that are agile and can be employed with great speed, flexibility and versatility. To do so requires robust sea and air lift, and rigorous training and exercises. Our exercise program includes joint and combined training in the defense of the Panama Canal and other contingencies in the region.

Southern Command's strategy for counter-narcotics is to work closely with the Ambassadors of the region to ensure we develop host nation national will, capability and success. In so doing, we reinforce democratic institutions and values. Secretary Cheney's guidance to me is to provide support to the country team, but U.S. military forces are not to become engaged in operations. We are not.

Given the diversity of missions and a geographic span that covers 19 countries, the best way to explain the details of the strategy is to cover the area by region.

THEATER OF OPERATIONS

The U.S. Southern Command's area of responsibility stretches 6,000 miles and comprises 19 countries. Grouped by similar threats and areas of concern, the command's area is subdivided into three geographically overlapping regions: the Andean Ridge, Central America and the Southern Cone. Panama we treat as a separate category.

Panama: Last year my predecessor advised this committee that his most important task was to revive the Panamanian economy. Today that economy is showing real growth and great potential. However, high unemployment and crime are still prevalent and plague a democratic, but fragile government.

Risks were taken following Operation Just Cause in organizing a Panamanian police force from former members of the Panamanian Defense Force (PDF). Most of the higher ranking members of the PDF have since been removed from the Panamanian national police. Last month, the first contingent of wholly civilian trainees, 232 strong, graduated and joined this organization. Providing competent and loyal security forces is still a concern of Southern Command, particularly as we draw down our forces to implement the Panama Canal Treaty by the year 2000. My intent is to insure that the Panamanians recruit, train and develop adequate security forces to protect the Canal, as well as their borders and people. The Department of Justice has the lead in this area. We are in support.

The threat posed to Panama by the narcotraffickers troubles me. Without a fully trained, professional police force and without control of its borders, Panama is again threatened by illegal drug trafficking. In my opinion, we must move quickly to reverse this trend, or it will become a direct threat to the government of Panama. In time, it could become a threat to an open and neutral Panama Canal.

Andean Ridge: For my discussion, the Andean Ridge region includes Colombia, Peru, Bolivia and Ecuador. It is in these four countries that 90 percent of the world's coca leaf is grown, and 100 percent of the cocaine is produced. The illegal production and sale of cocaine generate the billions of illegal dollars used to corrupt government officials and fund insurgents both of which threaten the national security of Andean Ridge countries and potentially the entire region. It is also here, in the Andean Ridge, that the linkage between the narcotraffickers and insurgents is most prevalent.

In Colombia, the government is under attack by both insurgent groups and the narcotraffickers. In Peru, the link between the insurgent and the narcotics organizations creates an even greater threat. Bolivia's instability, in large part, is also caused by the narcotraffickers' corruption of police, military and government officials.

As counter-narcotics efforts are brought to bear in these four countries, we see spillover of the narco-trade into Venezuela, Paraguay, Argentina and Brazil. Clearly, our strategy must recognize this trend and strengthen the political and national will of the countries affected.

Central America: The Central American region includes Guatemala, El Salvador, Belize, Honduras, Nicaragua and Costa Rica. Mexico is not in my area of responsibility, but it exercises great influence in Central America and is a conduit for narcotrafficking.

Our objectives in Central America include ending the conflicts in El Salvador and Guatemala and supporting the movement toward democracy in Nicaragua. While insurgencies pose a significant threat in Central America, the region also lies astride the narcotrafficking routes to the United States. The same insidious links of corruption, bribes and violence we see in the Andean Ridge region are now appearing in Central America. In my opinion, we need a Central American counter-narcotics strategy to complement that of the Andean Ridge.

The situation in El Salvador is still unresolved. As in November, 1989, the FMLN in November 1990 opened an offensive, but this year introduced sophisticated surface to air missiles. The U.S. Government's quick response supporting the legitimate government of President Cristiani assisted in blunting the offensive and providing the backdrop for free elections held last Sunday.

In Honduras, the President of the country has offered to enlist the armed forces in the fight against the narcotraffickers. In Guatemala, a new President has been freely elected and is committed to resolving rights issues and fighting the war on illicit drugs. However, Guatemala is being increasingly exploited by the narcotraffickers as a transit point for illegal drugs into the United States.

Costa Rica continues to be a bastion of democracy, but even democratic Costa Rica is threatened by the transiting of illegal drugs. Likewise, Nicaragua's fragile democracy is vulnerable to the drug trade. Moreover, I would be less than candid if I did not also express concern that the Sandinistas still control the Nicaraguan armed forces. Although Nicaragua did jail three Sandinista officers for the sale of surface to air missiles to the FMLN, evidence shows that the Sandinistan army continues to supply weaponry to insurgents in the region, most recently to Honduran terrorists who explicitly target U.S. servicemen there.

Southern Cone: The Southern Cone includes Argentina, Brazil, Chile, Uruguay, Venezuela, Paraguay, Guyana and Suriname. Several of these nations have huge debt burdens as well as social and other economic problems. It is in this climate that the narcotraffickers thrive and expand as pressure is exerted in the Andean Ridge.

In this region we seek to enhance and support the development of democratic institutions as these governments come to grips with debt and hyperinflation. Their efforts will improve the economic conditions of their people and reduce the influence of narcotraffickers. We need to include these potential source and transit countries in our counter-narcotics strategy and use their influence and resources to prevent or eliminate sanctuaries for the illegal drug trade.

PRIORITIES

To accomplish these objectives, I have established the following priorities:

— Stop the flow of drugs emanating from the region.
— Support a negotiated settlement of the El Salvadoran insurgency.
— Help develop security and democracy in Panama.
— Support democratic institutions throughout Latin America.
— Promote and enforce human rights.

Given the direct threat to each and every country of Central and South America and to the United States, my first priority is the war on the illegal trafficking of narcotics. Hundreds of tons of cocaine are being used illegally by Americans every year, and it all comes from my region. The narcotrafficking organizations threaten the very democratic institutions in Latin America that we want to protect. Southern Command by its location and access to the region can and is providing assistance to Latin American countries in fighting this war.

In providing assistance, we do so through the Ambassador and his country team. Clear objectives are set and resources are allocated based on those objectives. Secretary Cheney's guidance to me is to provide intelligence, training, communications and planning support to the host nation. We are doing so. U.S. force presence is at a minimum, and no U.S. military forces participate in counter-narcotics operations. The lead effort is law enforcement and must remain so. Our intent is to strengthen the will and capability of the host nation to fight the counter-narcotics war.

The Department of Defense has the lead in detecting and monitoring the flow of drugs into the United States. Southern Command is directly involved in this effort and conducts continuous coordination with other regional unified commands and U.S. agencies to track the flow of drugs northward.

Parmount in our efforts is accurate, timely, fused intelligence which can be passed to other U.S. agencies and shared with host nations. This is the key to success. We need robust intelligence assets and real-time products for host nations to exploit. The narcotraffickers have demonstrated that they recognize no boundaries. When they see strength in one country, they rapidly change their operations and exploit a weakness elsewhere. The narcotrafficker has a sophisticated processing and distribution operation—plus he has agility. If we are to win this war, we and our allies in Latin America must develop the same, if not a higher degree of agility. Intelligence is the key to that agility.

Another factor for success is the ability for host nation police and military counternarcotic forces to plan and conduct joint operations. Not only are coca fields and labs being targeted, but also distribution and transportation nodes and the leadership structure of the drug cartels. Southern Command is assisting the U.S. Ambassadors and host nations of the region in developing trained counternarcotic police and military units. These units are in the process of being formed and already have had success. From May to December 1990, over 60 tons of cocaine were seized in Colombia, Peru and Bolivia, with a street value of 13 billion dollars. More important, this equates to 500 million "hits" of cocaine!

The second priority of Southern Command is to support our government's efforts to bring peace and stability to the nations of Central America. Key to this effort is the resolution of the insurgency in El Salvador, as well as ensuring democracy continues to grow in Nicaragua.

The on-going negotiations between the FMLN and the government of El Salvador, while slow, are a positive sign. The recently conducted free election is sound evidence that democratic development continues there. We should encourage continued dialog between both parties. In providing military assistance to the El Salvadoran armed forces, we do not seek victory on the battlefield, but that degree of security necessary for democratic progress to continue and those conditions that favor both sides moving to a negotiated settlement.

One year after Operation Just Cause, Panama continues to make steady progress as a fledgling democracy. Southern Command's third priority is to ensure we provide assistance to the government of Panama across a broad spectrum in conjunction with the Ambassador and the country team. Right now, the third major civic action exercise in less than a year is ongoing in Panama. U.S. Active and Reserve forces are working side-by-side with Panamanian public works and health employees in rebuilding schools, clinics and roads throughout the country, and delivering medical, dental and veterinary services to rural communities. In less than a year, 90 schools, 19 clinics and 60 kilometers of roads have been built or refurbished. The Panamanian people—particularly in the outer provinces—witness first hand the competency of our troops and American compassion. Our military support group, which conducted joint police patrols, provided transportation and helped precinct headquarters to get a professional police force started, was drawn down in stages during the past year and eliminated entirely on January 15.

Another facet of my third priority is the implementation of the Panama Canal Treaty. In less than 9 years, the Canal reverts to Panama. We are working to create an awareness in the Panamanian Government and private sector of the complexity of this undertaking and are offering assistance and advice. The intent is to develop a Panamanian capability to keep the Canal open and neutral beyond the year 2000. We also want to revert Department of Defense holdings in a way that helps stimulate and develop a healthy Panamanian economy.

My next priority is to develop and maintain effective military-to-military relations with all democratic governments in Latin America. The U.S. military serves as an example of how armed forces operate in a democratic system and what is meant by civilian control of the military. We must do more than provide equipment or training—we must, by our example export our ideas, ideals and values. Our contacts help host nation militaries counter insurgency and drug trafficking and at the same time develop a sensitivity for basic human rights.

RESOURCES AND FORCES AVAILABLE

Resources are essential if Southern Command is to accomplish its varied and complex mission. I have an enormous land mass and challenging counternarcotic, counterinsurgency, counterterrorism and nation assistance missions. However, my operating budget is the smallest of any warfighting CINC. While I understand the need to reduce expenditures in the current and out years, Southern Command reductions need to be examined in light of mission requirements and the fact that it is already an economy of force theater.

Southern Command consists of a small forward-based force composed of combat and support elements of all services. They number about 10,000 in Panama and include 15 military groups and security assistance organizations throughout Latin America, and approximately 1,200 temporarily assigned personnel at Soto Cano Air Base, Honduras. In Panama this is a reduction from approximately 14,000 in the post Just Cause period. My intent is to reduce the force levels in Panama even further as we implement all provisions of the Panama Canal Treaty.

Exercises, deployments for training (DFT) and mobile training teams (MTT) are essential elements of Southern Command's capabilities. In fiscal year 1990, over 400 DFTs, MTTs and exercises took place and 19,000 personnel deployed in theater into 19 countries. Many of these deployments consisted of reservists and members of the National Guard, forces which are essential to this theater. From nation assistance to training host nations to exercising, the Reserve components greatly enhance our capability. This year we have had fewer available forces than last year due to Desert Storm, but every indication is that this situation will improve in the months ahead.

Another important capability is humanitarian and civic action, which at low cost provides high payoff. Our troops get superb training and the host nations benefit from an improved infrastructure and better care for their citizens.

SECURITY ASSISTANCE

Security assistance is a major tool for me in developing professional military forces in Latin America which support legitimate democratic governments. The total allocation for security assistance to the Southern Command is about 4 percent of the worldwide total. This low level significantly hampers my ability to effectively accomplish my objectives. Several countries receive no security assistance and the majority very little.

An important part of security assistance is the international military education and training (IMET) program. In this, civilian members of defense ministries and military personnel are sent to the United States for training alongside U.S. military, where they see how the military works with civilian leadership in a longstanding democracy. This is the first year we have been able to train civilian personnel using IMET. We feel that it has great potential to facilitate civil-military relations and foster civilian control of the military.

COUNTER-NARCOTICS

In order to support the war on drugs, Southern Command needs to continue to build architectures for providing fused intelligence, command, control, communications and intelligence, training, and planning support. We need an overarching strategy that blends in the capabilities of all CINCs and interagency assets as well as host nation forces. This strategy must recognize the narcotics spillover into other regions of Central America and the Southern Cone. Essential for success are dedicated intelligence platforms whose products we can share with host nations. The Airborne Recce Low (ARL) program provides the right type of high quality dedicated platform needed in Southern Command. Robust, secure communications which link all Ambassadors to each other and to Southern Command are also required to provide agility in the war on drugs. The Command Management System (CMS) program will provide me that agility. The Caribbean Basin Radar Network (CBRN) needs to be completed in order to thicken the radar coverage in a key avenue of approach used by the narcotrafficker.

GOLDWATER-NICHOLS IMPLEMENTATION

The Goldwater-Nichols bill is alive and well in Southern Command. The CINC is heard and his views considered by both service staffs and the Joint Staff. Access is available to the Chairman and the Secretary of Defense. Components are eager and willing to participate.

The quality of officers from the services assigned to Southern Command is outstanding. The service staffs have been supportive in filling positions in a timely way with high quality personnel.

CONCLUSION

I hope I have addressed those issues concerning Southern Command in which you expressed interest. The Southern region is vital to the national security of the United States. The threats from the region are largely non-traditional threats that undermine democratic institutions. Our challenge is to take an integrated, balanced approach to support national programs. We must win the war on drugs and to do so requires not only resources but interest and talent. As Americans, we must attack not only the sources of drugs in Latin America, but the demand for drugs in our cities. There is increasing recognition among Latin Americans that narcotics trafficking poses a threat to their societies and that we must confront it together.

Likewise, the insurgency in El Salvador must be brought to a negotiated solution. Our support to President Cristiani will be crucial during the coming year. We must not falter. We will continue to work with the government of Panama with patience and understanding. Our goal is a prosperous, free and stable Panama—one capable of heavy responsibilities in the year 2000.

As I mentioned at the outset, essential to accomplishing our mission in Southern Command and throughout the world will be quality soldiers, sailors, airmen and marines. We must attract and retain these young people by making them proud to serve their country, by giving them exciting duties, by challenging them and by providing an adequate quality of life for them and their families.

Thank you for your support.

Senator **Levin**. Thank you, General. Admiral Larson.

STATEMENT OF ADM. CHARLES R. LARSON, USN, COMMANDER IN CHIEF, U.S. PACIFIC COMMAND

Admiral **Larson**. Mr. Chairman, distinguished members of the committee, it is a pleasure for me to be here for my first appearance before this committee. I will submit a formal statement for the record, and with your permission I would like to make a few brief opening remarks.

Senator **Levin**. Thank you. That will be fine.

Admiral **Larson**. I am pleased to talk to you today about the U.S. Pacific Command, and more specifically to discuss our military strategy and our operational requirements as we enter a new and what I believe to be a fundamentally different world.

We have responsibility for an area that includes half the world's surface, more than 40 nations, nearly two-thirds of the world's population. And in this area change and diversity have been a way of life. Recent worldwide changes have been so sweeping that it might be easier for me to describe what has remained the same.

Our fundamental national interests in the Pacific and the world are unchanged. We want to ensure that we have freedom, security, and quality of life. We want to advance democracy, free markets, and human rights. Our mission in the U.S. Pacific Command is to secure and advance these interests in a rapidly changing world, in the face of what General Colin Powell calls the emergent realities of our new relations with the Soviets and the end of the Cold War; the widespread availability of sophisticated weapons, the continuing presence of terrorists and drug traffickers, the challenges of a multi-polar world, and the demands of a declining U.S. defense budget.

In addition to these new considerations, our future will also be affected by some enduring realities, long-term trends which include the qualitative improvement of the Soviet air defense, strategic and naval forces. I see this every day in the Pacific—the growing importance of our economic interests in Asia and the Pacific, and the global impact of regional conflicts, which we have seen in the Mid East crisis.

In light of these enduring and emerging realities, our guidance from the Secretary of Defense is clear. We will reduce our forces and refocus our efforts on regional issues, but we will remain a global power with global interests, so we must maintain our worldwide alliances and strong, flexible mobile forces, forward-deployed for deterrence and quick reaction.

Unlike Europe, the Pacific Command has always depended on a network of bilateral alliances and friendships for deterrence and peace. Over the last year we have shifted the focus of these efforts to concentrate on regional stability.

Our strategy is to use a combination of forward-deployed and U.S. based forces with carefully nurtured military-to-military relationships to ensure access and influence in support of our enduring interests, an effective deterrent and stabilizing presence in peace, and flexible responsive power in crisis.

I think the effectiveness of this strategy was demonstrated by our support for Operation Desert Storm. On short notice, we moved 90,000 people from our command, hundreds of ships and thousands of aircraft to the Mid East. We equipped them from our prepositioned ships and our war reserve stocks, and we sustained them over a 10,000-mile sea and air lifeline. Not only did we provide what the Central Commander needed, but we gave it to him when he needed it.

Our established relations throughout this region also proved invaluable when amassing international support and speeding the flow of air and sea cargo through the region. Our execution of this mission was facilitated by the increased authority and the high quality staff available to the Pacific Commander as we entered our 5th year of the Goldwater-Nichols DOD Reorganization Act of 1986. As a result, this first test of our ability to focus a broad range of assets in a regional crisis was a ringing success.

The political and economic success of our strategy is also demonstrated on a daily basis, as we reassure friends, support allies, and impart stability throughout the theater. Our strategy of presence and constructive engagement is working today, and it will work tomorrow as well.

Of course, accomplishing that strategy will become tougher as the budget gets tighter. We must maintain a modern, highly-qualified, trained and ready force, adequate to deter and sufficient to fight and win if required.

We must maintain funding for those programs that give us an enormous payoff for a modest investment, such as security assistance, Title X, CINCs initiative fund, and others, and most of all we must protect our most precious asset—our people—by supporting them with adequate pay, benefits, and quality of life.

If we are to secure our Nation's interests and promote the region's stability in the future, if we are to make our strategy work, we must meet these challenges. I am convinced we can, with your continued support.

Thank you very much, Mr. Chairman.

[The prepared statement of Admiral Larson follows:]

PREPARED STATEMENT BY ADM. CHARLES LARSON, USN, COMMANDER IN CHIEF, U.S. PACIFIC COMMAND

Mr. Chairman: I am pleased to be here today to testify on America's military posture in the Pacific in connection with your hearings on the President's defense budget for fiscal years 1992 and 1993. I appreciate the consistent support which you and the distinguished members of your committee have repeatedly shown for preserving America's vital security interests in Asia and the Pacific. Our strategy for stability and security in the Pacific is working. It has been implemented through forward deployment, force readiness and visible support to our allies and friends. Your support and understanding have been key to the success of that strategy. With your help, we will continue to enhance America's security posture within the framework of our national strategy.

We are living in an era of remarkable change. For over a year now change has occurred at a dizzying pace. We have reached a point where we can look back and say "the world has changed—fundamentally."

From a global perspective, the emergence of a multi-polar world, the complexity of regional conflicts, and the growing interdependence of economies have changed the focus of our national military strategy away from resolving global conflict to ensuring regional stability. Clearly restoring and preserving regional stability will have a major influence on U.S. military planning and programming for years to come.

Recent events in the Middle East have thrust this volatile region to the forefront of our security agenda. The President committed the full force of America's prestige, influence, and military power to upholding the principles of civilized behavior and democracy in defense of Kuwait's sovereignty. Operations Desert Shield and Desert Storm demonstrate the importance of having forward deployed forces, prepositioned assets and the need for additional strategic air and sealift to deploy quickly the air and ground forces needed in a crisis. Nearly one-fourth of U.S. Pacific Command's allocated forces are serving with the coalition in the Gulf region. Over the past 7 months, we have stopped aggression, forged a powerful coordinated worldwide response, and demonstrated we and our allies stand by our word and our principles. That response sends a powerful message to the potential tyrants of the world. We must be prepared to send this message in the future: When our interests are at stake, we will act.

PACIFIC TRENDS

It is impossible to talk about national security and national interests in this day and age and not address the economic dimension. Our access to markets, resources, and capital is an absolute key to a strong economy and improved security arrangements with potential trade partners. The dramatic trends of the past three decades underscore this fact and the growing importance of the Asia-Pacific region. As we look toward the future, we see global and regional powers emerging around the Asia-Pacific rim, clearly shaping a new world order. America's future economic, and by extension political, well-being are inextricably tied to the Asia-Pacific economic dynamo.

Economic vitality plays a new importance in the national power equation. We have witnessed the burgeoning of a powerful market economy in Japan, followed by the Republic of Korea, Taiwan, Singapore, and Hong Kong. We now see a third wave of double-digit growth economies on the horizon in Thailand, Malaysia, and Indonesia. The value of U.S. trade with Asia has exceeded Europe's for the last 17 years. The Asia-Pacific combined gross national product is greater than Europe's and is growing faster. Any calculation of market strength shows the world's economic center of gravity has clearly shifted to the Pacific.

The impressive performance of the developing economies of Asia since the 1970's shows significant ties between economic vitality and regional stability. As superpower confrontations diminish in the 1990's, economic competition for resources and markets may heighten latent regional friction. In this context, the traditional role of the U.S. as the region's honest broker assumes ever greater importance.

No other power is currently able or acceptable to play such a role. The great majority of Pacific nations openly welcome the stabilizing U.S. forward presence, and any U.S. reluctance to continue in this role would be inherently destabilizing. Any hasty or ill-defined reduction of our presence, real or perceived, would cast doubt on U.S. commitments in the region. A security vacuum could develop which other nations might be tempted or compelled to fill. U.S. policy must focus instead on the long-term, carefully weighing actions that offer immediate financial gain at the expense of future military flexibility.

Two key factors are needed to maintain security and stability in the region: Economic growth and U.S. presence. Economic growth will enable our friends to assume a larger responsibility for their defense. Our presence protects the sea lanes vital to expanding trade, reinforces our role as a honest broker to help avoid regional tensions, and reduces the need for Asian countries to expand their military capability in ways which might be destabilizing.

THE THREAT

The Soviet military threat has changed but has not disappeared. Force reductions, restructuring, the collapse of the Warsaw Pact, and a shift to a more defensive doctrine have reduced the likelihood of Soviet offensive operations. However, modernization of strategic nuclear strike systems makes it clear the Soviets seek to retain the capability to destroy the United States. Qualitative improvements in Soviet capabilities continue; naval, air, missile, and command and control systems are being upgraded and replaced with new sophisticated weapons. We must not ignore this threat while the future path of the Soviet Government is so uncertain.

The Korean peninsula remains an area of great concern. North Korea poses the greatest immediate threat to regional stability and the security of the Republic of Korea. Pyongyang has not abandoned its willingness to seek reunification by force if necessary. The North continues to devote scarce economic resources to increase its military structure. Pyongyang's stated intentions, historically unpredictable behavior, numerical military superiority, threatening presence above the DMZ, and isolation in the emerging world order all point to the need for vigilance on the peninsula.

I am increasingly concerned about the proliferation of modern weapons, particularly those of mass destruction: nuclear, chemical and biological weapons. As more nations seek and acquire these capabilities, the militaries of Asia-Pacific nations, the United States, and peacekeeping forces will find involvement more complex and dangerous. The threat of terrorist or clandestine use of these weapons continues to grow.

PACIFIC OBJECTIVES

Despite the many recent changes in the world, our interests have not changed—they stem from enduring American values. We continue to champion freedom, security, and quality of life. Advancement of democratic ideals, free markets, and human rights will continue to be bedrock U.S. interests. Those national objectives are best accomplished in the Pacific by enhancing regional stability. We seek a regional balance and environment in which economies can grow, democratic ideals flourish, and where aggression is unlikely to occur.

PACIFIC STRATEGY

In late August President Bush announced a new strategy for America's defense, tailored for the uncertainties before us today. Its most significant new feature is that while it accounts for the uncertainties surrounding the upheaval in the Soviet Union and the massive Soviet military capabilities we expect to remain for the foreseeable future, our new U.S. defense strategy refocuses our Active and Reserve forces principally against major regional contingencies that threaten American interests. But, unlike areas of the world where we have multinational security arrangements, achieving and securing our interests and building regional stability in the Pacific is a very individualized process. Every nation in the Pacific is different. Fears and aspirations are as diverse as language and culture. There is no common perception of what constitutes a threat or what characterizes stability. Consequently, our strategy is characterized by bilateral relations shaped by the needs and concerns of individual nations, and reinforced by the forward deployment of U.S. forces. The result is a network of unique bilateral ties, which forms a framework for stability in which the United States is the common glue.

In the Pacific, this strategy of strong alliances and forward presence is working and our security posture is strong.

PACIFIC POSTURE

As Secretary of Defense Cheney has pointed out, our strategy to deter low intensity conflicts and promote stability in the Third World must be one of "peacetime engagement"—a coordinated combination of political, economic, and military actions aimed at countering local violence and promoting nation-building. Today we are accomplishing this strategy by "being there and having lots of friends" throughout Asia and the Pacific.

Japan

Japan's location, economy, and industry make it a key player in this region and the world. Its geographic location influences Northeast Asia and the Northern Pacific. Its economy influences the markets of the world. Its technology is important to nations looking to the high tech world of tomorrow. As the world's largest contributor of foreign aid, Japan's voice carries authority in developing nations where we frequently have special interests. Our nations cooperate closely in the U.N., The World Bank, and other special projects such as the multilateral assistance initiative in the Philippines. Together, the U.S. and Japan account for about 40 percent of the world's combined GNP. Clearly, the futures of these two economic giants are intertwined. Our most successful forum for cooperation with Japan is our mutual security treaty which provides a framework for political and economic coordination as well as defense issues. As part of this defense relationship, we have made steady progress in bilateral training, interoperability of equipment and doctrine, improvement of the Japan defense force, and increased contributions through host nation support and burdensharing. Our presence in Japan is supported by virtually every Asian country and makes an important contribution to regional stability. The U.S.-Japan security relationship is the linchpin of our Pacific security strategy.

Korea

On the Korean peninsula, Seoul is attempting to offset North Korea's quantitative advantage by purchasing sophisticated weapons systems and developing a high technology weapons production capability. Since the North's sustained military production makes defensive parity difficult to achieve, Seoul must continue to depend on timely warning, mobilization, reinforcement, and our commitment to a common defense.

The continuing surge of democracy, rapid economic growth, and increased military capability in the South reduce our defense burden in Korea. To parallel these developments, U.S. forces are transitioning from a leading to a supporting role, beginning with the transfer of greater responsibility for combined operations. This reduces U.S. infrastructure requirements, and supports a prudent, phased series of steps to modestly reduce our force presence, which we must tailor to our combat units in-country and a minimum support structure. We will continue to maintain facilities for receiving follow-on reinforcing forces. As combat forces decline, we can correspondingly reduce the U.S. support structure, which the Republic of Korea can assume.

In Korea, cost sharing progressed from $70 million in 1990 to a commitment of $150 million in 1991. With the addition of labor cost sharing and a new category of military construction, we anticipate continued increases. Of course, we want them to do more, and I believe they will.

China

The U.S.-PRC military relationship has been stagnant since the PRC's bloody crackdown on demonstrators in June 1989. U.S. sanctions prohibiting military visits and sale of weapons and defense services to China remain in effect. In spite of a strong Chinese desire to have the sanctions lifted, recent trials of Chinese dissidents confirm human rights policies in China have not changed. China will continue to be an important presence in Asia with influence on world affairs, as recently demonstrated in the U.N. Security Council vote on sanctions against Iraq. While we will continue to work with China on global issues, the prospects for early renewal of military contacts are dim.

Over the past few years, the two Communist giants, China and the Soviet Union, have improved their bilateral relations, culminating in the historic May 1989 summit between President Gorbachev and paramount leader Deng Xiaoping. Since the summit, political, economic, cultural, and diplomatic contacts have increased. In 1990, both sides reached an agreement on principles for force cuts and for confidence-building measures along the Sino-Soviet border. While differences remain, talks contribute to tension reduction, allowing Beijing to focus on domestic concerns and devote more resources to economic development. Nevertheless, we do not foresee a military alliance between these long term adversaries.

Philippines

U.S.-Philippine friendship is close and long-standing, and our support for democratic institutions there carries an important message to the entire region. Events in the Philippines are troubling, however, and it remains one of our most serious regional concerns.

The nation is mired in economic depression, with high inflation, capital flight out of the country, and little or no growth in industrial investment. Domestic stability is further endangered by a persistent nationwide Communist insurgency and several rightist movements seeking to oust President Aquino. The Gulf war added a difficult international dimension because the Philippines depends on Mid-East oil, and has hundreds of thousands of contract workers in the region making important foreign exchange remittances.

The Philippine Communist movement suffers its own internal problems—in ideology, leadership, recruitment, and funding. The government aggressively pursued and arrested a string of key Communist figures and rightist coup plotters. Tight security has helped us control danger to Americans posed by terrorists.

Since 1946, our facilities in the Philippines have been a cornerstone of regional presence in Southeast Asia. Philippine American cooperation talks are helping to define a future relationship that should be more balanced and equitable than at any time in our history. Although the negotiations will bring changes, and fiscal and political realities are causing us to rethink our military structure in general, I am optimistic negotiations will lead to a mutually acceptable agreement and a continued U.S. military presence.

Southeast Asia

Our mutual security relationship with the Philippines is an essential element of U.S. regional presence, but not the only element. We are continuing to pursue access in other countries to support a more flexible presence and sustain our forward deployed strategy. Access to Southeast Asia facilities is needed to maintain and train U.S. forces and so we can sustain them west of the Strait of Malacca. Southeast Asia is the "gateway" for our forces to the Indian Ocean and Persian Gulf, and the "crossroads" of Pacific Command's forward deployed operations.

Australia

Because of shared values, national interests, long established aid programs, and regional security ties, Australia plays a leading role in the South Pacific and Southeast Asia. Australia quickly and easily integrated its naval and medical units with U.S. units in the Gulf, proving the value of our relationship and interoperability initiatives.

South Pacific

Regional issues and organizations are growing in importance in Micronesia, Melanesia, and Polynesia. Diplomatic ties and participation in global organizations are likewise increasing. We are reversing the post World War II perception of benign neglect and replenishing the pool of good will. We must continue our humanitarian and civic action efforts, training and security assistance programs, and ship visits.

India

U.S. relations continue to improve with India. India views countries in the Indian Ocean in regional terms while the U.S. relates to them globally. Thus, U.S. and Indian interests do not always converge. We have sought, however, to identify shared goals and increase contacts with Indian military and political leaders. In this context, military-to-military cooperation and interaction have increased significantly.

Counter-narcotics Operations

The President and Secretary of Defense directed that we deal with narcotic trafficking as a high priority national security mission. We accepted that mission and remain fully committed to success. We have made great progress toward an effective communications network for law enforcement agencies, and encouraged our Pacific friends and allies to develop aggressive and capable counter-narcotics programs. Our Joint Task Force Five will reach full operational capability in 1991, increasing our capabilities for intelligence cued operations in the Pacific Ocean area. Our joint effort with the U.S. Customs Service, "Project Cook," will further advance our counter-narcotics intelligence network which begins operations in 1991. "Project Cook" will provide information to analyze patterns of activity of drug trafficking vessels and track them to interdiction. It will ultimately connect the Customs Services of 28 Pacific nations for maritime counter-narcotics reporting.

Hawaii's marijuana eradication, "Operation Wipeout," was extremely successful in destroying the entire fall 1990 marijuana crop. Under drug enforcement agency leadership, cooperation of all Hawaiian drug enforcement agencies, Department of Land and Natural Resources, and the Department of Defense resulted in a successful operation to map the growing areas and eradicate the plants.

PACIFIC NEEDS

The comprehensive fiscal year 1992-1997 multiyear defense program outlines capabilities we need in the Pacific to support the new U.S. defense strategy. Our forces will be smaller but still capable of securing our Nation and its global interests.

For fiscal year 1992-1993, our priority remains sustainment of combat ready forces and advanced capabilities, especially as we reduce the total force. Thus, I ask you to continue to support quality U.S. military personnel, vigorous defense research and development, fielding of advanced military systems, and preserving critical elements of America's defense industrial and technology base. Our "decade of development" calls for us to scale back production, preserving our technological superiority through ambitious research, procurement of high priority systems at more efficient rates, and establishing a foundation for sustaining U.S. military strength through the year 2000 and beyond.

The nature of this maritime region and most likely threats require largely air and maritime forces with highly mobile and flexible ground forces as well as strategic mobility assets to deploy them. We must continue our ability to project military power rapidly with ready and sustainable forces. Power projection requires a strong amphibious capability; we must protect amphibious ship building programs. We need replacements for aging fleet assets, particularly all weather medium attack aircraft, including modern smart weapons, and anti-air warfare assets.

We still need anti-submarine warfare forces to maintain maritime superiority and establish sea control during conflicts. Sufficient ordnance, munitions, and parts support must be available and positioned to support forces that respond to regional contingencies. We must provide new equipment with fully integrated logistic support, manpower, and training required to operate it. Maintenance funding must maintain a ready force and allow upgrade of selected older systems to state of the art. Training programs must focus on multi-mission capabilities and joint operations.

We also need to continue, and where possible augment, those programs which improve our own security by enabling our friends and allies to secure themselves. Collective security continues to be reinforced through international defense cooperation initiatives. Traditional security assistance measures involving grant aid, foreign military sales, and the international military education and training program have been effective with lesser developed countries. Title X cooperative programs with developing countries have also paid impressive dividends.

CONCLUSION

Our strategy and forward presence of U.S. forces have been key to averting crises for the past 40 years. They provide visible deterrence, preserve regional stability, and promote U.S. access and influence.

Our planned reductions in forward deployed forces will increase the need for an improved strategic mobility capability. Prudent forward-basing and access, innovative deployment of forces, prepositioning of combat and support materials can reduce the burdens of power projection.

In the Pacific, we pursue a winning strategy that covers over half the globe and involves most of the world's people—and we do it with only one-sixth of America's active duty military force. Only one-third of the forces earmarked for the Pacific are forward deployed outside the United States. As we adjust this forward deployed force, we must devote even more emphasis on the access and influence which mark our commitment to Pacific security and stability.

Finally, I must compliment the finest force of all volunteer soldiers, sailors, airmen, and marines that I have seen in my many years of military service. The men and women of the U.S. Pacific Command are maintaining impressively high levels of readiness, dedication, and skill. I am proud of them and believe we owe them our full support, especially in the pay incentives and quality of life programs that are so necessary to retain our most valuable resource—our people.

I am convinced we have the right strategy to deal with this new and changing world. With your continued support, our future in the Pacific looks bright.

Senator LEVIN. Thank you very much. General RisCassi.

STATEMENT OF GEN. ROBERT W. RISCASSI, USA, COMMANDER, U.S. FORCES, KOREA; COMMANDER IN CHIEF, UNITED NATIONS COMMAND; COMMANDER IN CHIEF, COMBINED FORCES COMMAND

General RISCASSI. In the February 20 letter of Senators Nunn and Warner to me you ask some very specific questions which are answered in my written statement. I would like to submit that for the record and cover just some salient points from that statement.

Senator LEVIN. That will be fine. All of the statements will be included in the record.

General RISCASSI. First, I think it is appropriate to address the military objectives and the source of those objectives, and the strategy that coalesces those objectives into finite direction on the peninsula. That source of strength, if you will, comes from the President's report on Asia Pacific Strategy, commonly referred to as the Nunn-Warner report, or the Nunn-Warner initiatives.

It delineates that U.S. military objectives are: to deter North Korea from aggression and, if that deterrence fails, to defeat the aggressors from the north; second, to reduce any political and military tension on the peninsula by encouraging North-South dialogue, and to attempt to institute a series of confidence- and stability-building measures; third, to transition the U.S. forces from a leading to a supporting role over a period of time; and fourth, to seek a reduction in the U.S. force structures that will, in fact, support U.S. interests on the peninsula and in the region.

As I indicated, the strategy that coalesces the military objectives together is a forward presence or a forward coalition defense to deter aggression. That is achieved by an in-place force positioned for immediate response to any type of attack, and the ability to rapidly reinforce with U.S. forces. The key is the technologically and doctrinally superior coalition aspects that we enjoy versus the armed forces of North Korea. Desert Shield's value and effect as a deterrent ought not to be minimized on the North, or from a different perspective, the South.

The second point I would like to highlight for you is that the President's budget for 1992 and 1993 sustains the capabilities in theater to meet the strategic objectives. The operational priorities and deficiencies for the theater are viewed in a coalition context. From the U.S. side we would like to improve the command, control, and communications because we think it is absolutely imperative to ensure that requisite capabilities are enjoyed by the coalition forces in the transmission of orders, et cetera. I think you saw that manifested very well in Southwest Asia.

Second, we need to improve the intelligence apparatus. It is clear that JSTARS played a very important dimension in the war in Southwest Asia. We would use the same capability on the peninsula to a great advantage, particularly when one considers the way the linear fight starts and the way we envision it unfolding.

Third, is the readiness and sustainability of the force. By that I mean modern munitions, prepositioned war reserves, storage facilities, and stockages. Probably this is the area where we are most deficient. Desert Storm did not truncate our in-place days of supply to a level that we were worried over, but it approached a level of concern for those stockage items that we had on the peninsula. We did not have all the preferred munitions that we would like, nor do we currently enjoy all the preferred munitions we would like.

Fourth, because of the time-distance factors involved in supporting the coalition force from the sustaining base of the United States, it is imperative to expand our intratheater mobility—and I echo Chairman Powell's and Secretary of Defense Cheney's comments on fast sealift and C–17 air as essential elements to support the coalition force. These priorities are from a unilateral U.S. Forces-Korea perspective looking into the coalition.

From the Republic's side, and looking at their shortfalls, first and foremost is the procurement of a new fighter. They are in the process of closing on that decision. We should have some resolution on or about the 1st of April. Second, is the development of an improved ASW capability and, as you know, they have agreed to purchase the P–3C which should go a long way in alleviating ASW shortfalls.

Third, is improvement in fire command and control systems. They are in the process of running a test on those radar systems referred to as the Q–37 and Q–36 which should, in fact, enhance the cuing necessary from a warning perspective. Technical intelligence systems are next, followed by a need for expanded attack and lift helicopter assets.

The fundamental shortfall, however, is the absence of an adequate concept based requirement system that would generate some degree of priority and order in the procurement of defense systems. A concept based system would permit a logical application of resources, whether building up or down, that ensures that your first dollar is spent on the most critical improvement, and the last dollar on the least critical. Currently, we do not enjoy a very good system of systems that would give you the visibility into that process. We have started one; it will take a while to inculcate, to firmly implant it into the infrastructure, but we have started.

I guess the last point that relates to an ordered process is the effect of Desert Storm. Desert Storm was a conditioning factor of high-technology weapon systems employed in a theater that has some very similar aspects to Korea. This fact was recognized by the Republic and should be a sensing factor on future procurements.

The first phase of the Nunn-Warner report will conclude on December 31, 1992. The tenets of Phase I objectives that were resident in that report will be achieved by that date.

The last point I would like to make, Mr. Chairman, is that cost-sharing or burdensharing is progressing. In 1991 the contribution is $150 million; in 1990 it was $70 million. So we have had a two-fold increase. We are attempting through the Ambassador for Burdensharing to establish a protocol that will identify a floor, and then put an indexer and an inflator on top of that, to ensure that there is a growth potential on the cost-sharing and burdensharing in the Republic. For the immediate timeframe it has increased two-fold, from 1990 to 1991.

Thank you, sir.

[The prepared statement of General RisCassi follows:]

PREPARED STATEMENT BY GEN. ROBERT W. RISCASSI, USA, COMMANDER, U.S. FORCES, KOREA

Mr. Chairman, distinguished members of the committee, I welcome this opportunity to share with you the views of the U.S. Forces Korea. As all of you know the international situation continues to change at a dramatic pace. By comparison, these days the situation on the Korean peninsula might appear stagnant to some. However Korea is changing, in many ways favorably, and in other ways, less favorably. Although there is little drama associated with changes in this vital region of the world, the subtlety should not belie the importance to U.S. concerns.

It has been said that the 21st century will be the Pacific century. Certainly the growth of economic development, the tremendous accumulation of wealth, and the latent power and markets of Asia would indicate the credibility of this prediction. We already have moved to a period where over half of America's annual trade is with Pacific nations, where 9 out of the 10 largest banks in the world are found in Asia, and where four of the world's largest military forces converge in this corner of the world.

As we view this trend it is important to ask how America will be represented in this region. There are some, President Gorbachev for example, who have advocated that America's leverage in the overall balance of powers within the Pacific be reduced, accompanied by a reduction in military presence. There are many Americans who would like allied countries in the region to project a larger role globally, and to improve aspects of their partnership with America. Those nations, like Japan and the Republic of Korea, that have benefited and grown under America's protective umbrella, are being asked to show some international return, to exert their power in a more responsible and global context.

It is important to understand these conflicting future visions as we consider the situation in Korea. As the cold war ends and the international balance of powers begins to shift, many, including the nations of Asia, are questioning old commitments, and looking expectantly toward new roles. Decisions made today will influence the future.

REGIONAL IMPORTANCE

Against the global panorama, the peninsula of Korea may appear caught in a time warp. The microcosm of the ideological cold war remains very much alive, the peninsula remains divided, and military tensions are evident with two vast armies arrayed on the DMZ.

But Korea today is not the same nation that emerged from the struggle of the early fifties. The Republic is hurtling foreword socially, politically and economically; it is considered one of the economic miracles of the postwar era, and ranks as one of the most advanced nations of Asia. Annual economic growth rates are habitually in the double digits, the democratic electoral process is taking root, and the Republic of Korea has the highest density of doctorate degrees per capita of any nation on earth. South Korean industry competes globally in shipbuilding, automobiles, construction, textiles, steel, and high technology. It is a remarkably different nation from the agrarian state that was invaded by its then more powerful neighbor 40 years ago. It is a nation which inspires the use of superlatives.

In 1980 the per capita GNP was $1,500. Today the per capita GNP of the Republic of Korea is in excess of $5,000 per citizen, and this figure is expected to grow to almost $7,500 by 1995. Compared to the per capita GNPs of the United States or Japan, these figures may seem small, but the Republic's per capita GNP is over five times the size of North Korea's, a country which has about half the population of the south. If they can sustain their remarkable economic growth rates, by the end of this century South Koreans will more than double the wealth of their nation and emerge from the ranks of the newly industrializing nations as a fully industrialized state.

History attests to the geostrategic importance of the Korean peninsula. It is the bridge between Japan and the continent, and over the past millennium, almost every conflict in northern Asia has been preceded by an invasion of Korea. In this century alone the peninsula has changed hands three times.

Within the region, the balance of power on the peninsula has always taken precedence over the larger equation of the cold war, with which it has often been linked. Every state in the region has a central interest in the geostrategic position of Korea. None would be content to see it fall under the domination of any one of the others. Almost every nation in Asia feels comfortable with America's security presence in Korea.

As we consider the next century it is vital that the role of Korea, and America's relationship with Korea be a determinant. This alliance has not been a one way street. In all of Asia we have no stronger friend or ally. Over the past 40 years the Korean people have proven time and again, regionally and globally, their support for the American nation.

This alliance will become an even stronger lever in the strategic balance of power in Asia. As the Republic of Korea continues its growth, it is looming as a center of regional influence. Over the past several years, trade with the PRC and Soviets has grown meteorically, even in the face of divided allegiances militarily. Recently the Soviets took the step of official recognition of the Republic of Korea; and this fundamentally alters the situation of the past 40 years.

If peace is maintained, Korea will be an international center of commerce and political influence. Although the U.S. supports the goal of peaceful unification of the two Koreas, it is important to appreciate the impact, once unification is achieved. Korea will be a nation of 70 million, and economic growth will surge even more with the addition of land, labor and natural resources. Already noted internationally for its dynamism, the Korean nation will multiply in output, productivity and influence.

MILITARY OBJECTIVES, CAPABILITIES AND STRATEGY

The U.S. military objectives for the Republic of Korea are:

— deter North Korean aggression . . . if deterrence fails, defeat aggression by North Korea;

— reduce political and military tensions on the peninsula by encouraging north-south talks and the institution of a confidence building measures (CBM) regime;

— transition U.S. forces from a leading to supporting role, including some force reductions; and

— during the 1990s, seek to restructure U.S. forces to a level that will support U.S. interests over the long term.

These objectives were reassessed and sustained in the President's report to Congress, titled "A Strategic Framework for the Asian Pacific Rim," published in April 1990. The first objective clearly remains the most important and establishes the parameters for implementation of the additional objectives.

The military strategy for defense of the ROK is a component of the strategic framework provided by the Chairman of the Joint Chiefs of Staff and Secretary of Defense during their earlier testimony. The deterrence of conflict in Korea is considered central to the maintenance of regional stability. The strategy being pursued is very similar to the strategy that brought success in the cold war. North Korean aggression is contained through deterrence, supported by the coalition of our two armed forces. The Republic of Korea continues with its economic and political development, ensuring that its systems offer greater prosperity and well being than the political and economic structures of the north. Simultaneously the strategy is designed to ensure a political or diplomatic solution to the tensions on the peninsula.

The ability to deter conflict, and defend successfully should deterrence fail, depends on prepared and trained combined and joint forces. The United Nations Command retains responsibility for Armistice maintenance; the ROK/U.S. Combined Forces Command has operational control over both nation's military forces in the event deterrence fails; and U.S. Forces Korea is the headquarters responsible for maintaining the U.S. commitment to the coalition.

Over 95 percent of forces provided to the coalition during the condition of armistice are ROK forces. The bulk of the U.S. force commitment is in augmentation forces. The U.S. maintains one Army division and a tactical air force composed of two tactical fighter wings in forward presence. Additional U.S. forces in theater are primarily designed to assist in reception and battlefield support. Given the probability of a short warning time in this theater, rapid reinforcement is crucial both as a measure necessary to ensure deterrence and respond to crisis.

The United States stands behind the efforts of the Republic of Korea in the evolving north-south negotiations. United States policy is to support the Republic of Korea on issues related to security negotiations between the two Koreas, and to the extent possible, to assist in creating conditions that will lead to a more favorable security environment. Later in this discussion I will provide additional details on the transition of U.S. and ROK roles on the peninsula.

THREAT

Just as the Republic of Korea inspires the use of superlatives, North Korea also earns superlative titles, but of a very different nature. The DPRK is one of the most heavily militarized nations on earth. It stands as one of the most totalitarian countries in the world. One out of four citizens in North Korea is a member of the armed forces. To appreciate the significance of this figure one must contrast with America, a nation with global responsibilities, where less than 1 of every 100 citizens serves in the armed forces. North Korea's military ranks today as the fifth largest in the world. This capability is far in excess of any conceivable defensive requirements.

The north continues to spend between 20 and 25 percent of its GNP on its military. Almost half of this expenditure goes to investments in equipment. Over the past 12 years the north has completed a major reorganization and modernization of its armed forces. Over 60 percent of their army now sits in forward attack bases within 100 KM of the DMZ. Since 1984 alone they have added about 1,000 tanks, over 2,500 infantry fighting vehicles, and 6,000 artillery tubes or rocket launchers to their Army. They now have over a 2-to-1 advantage in numbers of tanks and artillery, and a 1.5-to-1 advantage in personnel. While the figures alone suggest a growing problem, it is important to understand the military significance of this restructuring.

Both the national policy and the military doctrine of the north are offensive. As all here are aware, the north has never discarded its pronounced national policy to unify the peninsula on its own terms, including military force if necessary. Over the past 10 years North Korean doctrine and organization have been revamped to increase the lethality, speed and combat power of the attack.

By shifting a greater percentage of their combat forces into forward positions they increase the tempo of the advance. The mechanization of some of their infantry forces, the increase in armored units, and the vast growth of self-propelled artillery units contribute even more to this increased rate of military tempo. The proliferation in numbers of lethal systems adds to the combat power that can be concentrated in breakthrough sectors.

Their military doctrine has been adapted and streamlined to accentuate a rapid assault against the south. An attack from the north could unfold with greater speed, a greater concentration of combat power, and with far less warning than the scenario we once feared in Europe. The attack will be directed against the narrow DMZ, concentrated in sectors that afford rapid advance and offer the prospect of a mechanized and armor heavy exploitation. Up to 100 artillery tubes per square kilometer will be dedicated to smashing defending forces. The initial attacking forces will be reinforced by a continuous progression of heavier and more mobile units in an effort to create a breakthrough and commit forward reinforcing combat forces to a southward exploitation.

It might be helpful to analyze the north's capabilities in comparison to the forces of Iraq. The size of North Korea's ground forces are roughly equivalent to the size of Iraq's, and they share many of the same combat systems. Their active forces number approximately 1 million, about equal with Iraq, but when reserves are added their force swells by about 5 million. North Korea's forces will attack. The terrain offers greater survivability and makes air to ground targeting more difficult. We will not be afforded the opportunity to degrade the north's ground forces with air power before the ground battle is joined. Moreover the north's forces will be positioned for a well planned, well supported attack from the start of hostilities. Also in contrast to the Iraqis, the north's forces will be concentrated for the attack to the south; they will not be dispersed around the country, nor positioned to deter threats from other borders. They have built well entrenched fortifications and multiple command and control facilities into the sides of rocky mountains. The north also has a large and capable air force and navy, and they have spent 40 years preparing diligently for this attack.

The north has Frog rockets and SCUD missiles, and is developing a longer range, more accurate version of the SCUD. They have developed a family of elite and highly trained special forces units, sized at over 100,000 soldiers, many of whom will be targeted against rear areas. From the start of conflict they will attempt to infiltrate into the Republic of Korea, to interdict the flow of forces and supplies and destroy vital command centers, airfields and port facilities. The north also presents a significant chemical and biological threat. In other words, the evolution of the North Korean military over the past 10 years has been a manifold increase in size, scale and sophistication.

Juxtapose this comparison with the comparatively smaller Iraqi assault against Kuwait City. Seoul—the capital, center of industry and commerce, and location of almost a third of South Korea's population—is only 30 miles from the DMZ.

NORTH-SOUTH TALKS

One of the sources of optimism over the past several years has been the progress in north-south negotiations. As many of you are aware there is a long and frustrating history of negotiations associated with the conflict on the peninsula. No peace treaty has ever been signed ending the conflict; the peace is maintained as a military armistice under the mantle of the United Nations Command and the supreme commander of the North Korean military. Since the war, the north has steadfastly resisted efforts to initiate formal negotiations with the south or to recognize the legitimacy of the Republic of Korea Government.

Recently, however, Pyongyang has displayed an increased willingness to conduct formal talks with their ROK counterparts. Over the past several years low level officials from the north and south have met intermittently to discuss issues related to Red Cross exchanges, sports issues, cross border traffic, and allowing contact or visitation between relatives on both sides of the DMZ. These talks were marred by propaganda and disrupted by the north whenever they wanted to send diplomatic signals on other issues, such as the annual Team Spirit Exercises.

Last year the north agreed to a series of meetings at the prime ministerial level. In September, for the first time, the prime ministers of the two nations met in Seoul. At this meeting, the ROK proposed an 8-point accord for improving relations between north and south. They stressed the establishment of wide ranging mutual exchanges of people and goods. In accord with the south's position on arms control they also provided a plan, which advocated a series of political and military confidence-building measures, that would lead gradually to agreements in arms control. Emphasis was placed on "trust building" as a prelude to arms control.

For their part the north called for a series of measures designed to halt political and military confrontation, such as an end to the Team Spirit Exercise. Further they presented a plan for arms reductions on the peninsula—a nonverifiable force reduction to 100,000 on each side, and the denuclearization of the peninsula. Included was a complete withdrawal of all U.S. forces. Accompanying this proposal was a North Korean offer of a nonaggression pact. Finally, the north asked the south to suspend efforts to join the United Nations under separate country status. Notably the north would not discuss the issues of visitation or cross border exchanges, and they continued to emphasize the release of those South Korean citizens who were imprisoned for visiting North Korea. For the most part there were no unexpected proposals from the north.

The second meeting convened in Pyongyang in October 1990. Many of the same themes were presented, but North Korea offered a detailed plan for a 7-point nonaggression pact. The South Korean prime minister replied that a nonaggression pact would be meaningless; that North Korea should unilaterally renounce their goal to unify the peninsula by force. He added further that an arms control agreement would require a verification regime. Encouragingly, the North Korean prime minister toned down the political rhetoric that clouded the first meeting.

The third talks were held in Seoul in mid-December. The south again reiterated the implementation of political and military confidence-building measures, stressing the immediate installation of a hotline between the two national premiers. They asked again for a discontinuation of political slander and the exchange of home visitors. The north rejected all ROK proposals and again pushed for the immediate signing of a nonaggression pact. The ROK countered by reminding the north of their history of aggressive and terrorist acts, and repeated that a basic framework was needed first to regulate inter-Korean relations before a nonaggression pact could be signed.

The next round of talks were scheduled to occur in late February, but the north announced the cancellation of these meetings because of the Team Spirit Exercise.

Clearly north-south negotiations have become more important to Pyongyang. Kim Il Sung realizes that he must portray a willingness to ease tensions on the peninsula as he searches for new allies and additional sources of aid and technology following the collapse of communism worldwide. However the north is not ready to make any major concessions in these talks. Pyongyang remains unwilling to accept Seoul as an equal partner, and searches for opportunities to undermine the Roh government and destabilize the growing democracy in the south. The north still views these talks as another means to maintain its efforts to unite the peninsula under its dominance. Our allies in Seoul, with vivid memories of Pyongyang's history of terrorism and violence against the ROK, quite properly insist that the north-south talks focus on concrete, practical confidence-building and arms control measures, rather than the vague and unsubstantiated assurances presently offered by Pyongyang.

I do not expect a sudden end to the military confrontation on the peninsula in the near future. The situation probably will not mirror the sudden change that occurred in Europe, as some have posited. Kim Il Sung remains the revolutionary leader of the north. He has achieved a level of dominance unequalled by any dictator alive today. The north is led through a personality cult that has been built over 40 years, and as is accurately reported, North Korea remains the most closed and insulated society in the world. Kim has shown no lesser resolve in his desire to dominate the south, nor, as stated earlier, has the north made any effort to turn swords into plowshares.

However, the correlation of forces, externally, is shifting against the north. The East European nations, which were a part of the north's alliance fabric, are now transitioning to democracy, and almost all have extended diplomatic recognition to the Republic of Korea. The Soviets have officially recognized the Republic of Korea, and trade relations are growing daily. Trade with the PRC, which still refuses to establish formal diplomatic relations with the Republic, is up to around $3 billion a year, and continues to expand. These developments are causes of concern for the north, and they do not bode a Communist future for the peninsula.

To what extent the North Koreans perceive a fundamental change in the balance of forces is open to controversy. Clearly Kim can no longer make a decision to invade the south confident that he would have the support of the Soviets or East Europeans. Diplomatic recognition, as you know, involves the acceptance and acknowledgement of South Korea's borders. In the eye of states which recognize the Republic of Korea, a violation of those borders represents an act of aggression. Given the degree of international responsibility exhibited by the Soviets over the past several years, it seems likely the Soviets would condemn such an invasion. Intuitively, it also seems clear that the PRC would not extend support to a blatant act of aggression. But signals from Pyongyang indicate frustration rather than acceptance of the changing global environment. Although there is some wishful thinking and hypothesizing associated with the recent changes, there is no firm evidence to suggest the North Koreans are relenting in their intention to unify the peninsula on their terms.

The Republic of Korea, under President Roh's guidance, has maintained a policy of Nordpolitik, designed largely to further erode tensions on the peninsula. In part it is designed to suspend the competitive approach to diplomacy that was a characteristic of the ROK's previous policies. By taking advantage of the opportunities presented in the changing global environment, the south has encouraged North Korea's allies to strengthen their bonds with the south and to follow an even-handed approach, the results of which have already been mentioned. A central element of this policy is to avoid isolating the north. The Republic of Korea is carefully encouraging Pyongyang's previous allies to support the goal of stability on the peninsula. This complements the north-south initiatives, and creates greater likelihood of eventual diplomatic solutions to the tensions between the two Koreas.

The progress is encouraging, even though there have been no direct solutions to the peninsula's security situation. With relation to our overall strategic objectives, conditions are being met which should provide a foundation for peaceful change.

LEADING TO SUPPORTING

Over the past year, significant progress has been made in executing the steps in the President's report to Congress titled "A Strategic Framework for the Asian Pacific Rim"—commonly referred to as the Nunn-Warner initiatives. Progress has been two-fold, first in terms of achieving agreement with our Korean allies over transferal of roles, missions and facilities, and second with regard to the actual implementation of several of the measures.

The primary thrust of the Nunn-Warner initiatives is to transition U.S. forces from a leading to supporting role in Korea. The transition in the role of our forces was designed to occur in phases, and the drafting and agreement of the first phase was completed in April 1990. This first phase covers the period of 1990 through the end of 1992. Initial work has begun on the drafting of the second phase which covers 1993 through the end of 1995. The third phase will last through the end of the century.

The government of the ROK has been very supportive and adaptive to the milestones established under Nunn-Warner. Last fall the ROK National Assembly completed passage and initiated implementation of the 8.18 Plan. This plan, far more comprehensively than our own Goldwater-Nichols bill, reorganizes the national military command structure of the ROK armed forces. It is designed to create a command structure capable of providing theater command and control during conflict. The ROK Chairman of the Joint Chiefs of Staff has assumed peacetime operational command and control of ROK armed forces not committed already to the Combined Forces Command, removing this responsibility from service chiefs. The joint staff has been restructured and significantly enlarged to assist the Chairman in his new duties. Other changes also have been made to ensure a centralized ability to command and control forces under conflict conditions. It will be several years before this new structure is fully matured, but the ROKG is building a command and control structure to assist in the leading to supporting initiatives.

The ROK defense plan has also been adapted to provide increased self sufficiency. This is a broad and ambitious plan, which includes force improvements in ground, air and naval forces.

The ground modernization effort continues with priorities on mechanized and armored forces, improvements in indirect fire command and control, tactical intelligence, and army aviation. By 1994 the ROK Army tank fleet will have nearly doubled from the year 1982, with almost half of their tanks being the Korean manufactured K-88. They have also completed four-fifths of their domestic production and fielding of the Korean Infantry Fighting Vehicle. These two programs represent significant increases in ground mobility and combat power, and future expansion is under consideration. Blackhawk helicopters are also being fielded, and these programs offer a tremendous enhancement in tank killing and infantry mobility. The ROK Army is currently considering Hughes Firefinder Radars, and this capability would greatly improve counterbattery effectiveness. The Republic of Korea Army is restructuring and rebuilding its tactical intelligence units, and a variety of new intelligence systems are being fielded or considered.

The expansion of tactical air forces also is progressing. There has been a disruption in the future fighter program, as a result of a program review by the newly appointed Minister of National Defense. The escalation in costs of the McDonnell-Douglas FA-18 fighter program was the impetus for the fighter program review, and reconsideration has been limited to the FA-18 and F-16. Because of the associated co-development aspects of the program, the initial fielding was not programmed to begin until 1993. This disruption will stall the fielding plan, and we continue to encourage the ROK Ministry of National Defense to complete their review as quickly as possible. Other Air Force purchases, including additional intratheater lift, upgraded targeting and detection systems for existing fighters, and air defense suppression platforms remain on track.

The naval expansion program is progressing satisfactorily. Current emphasis is on building an ASW capability against the 25 diesel submarines and large mini-submarine fleets of North Korea. In partnership with the FRG, the ROK is in the process of building the first three diesel submarines of a submarine fleet that will be enlarged later in the decade. They have also selected the Lockheed P-3C to provide air ASW capability to their naval forces.

The Koreans have also agreed to other changes under the leading to supporting initiative, but many would require discussion in closed hearings. It is encouraging that these negotiations are conducted positively on all sides, and there is a very constructive evolution occurring as a result.

BURDENSHARING

In the formal burdensharing arena the ROK is being responsive, and has made significant increases in offsets to U.S. costs for forward stationing. The ROK ranks third among U.S. allies in providing an appropriate share of its GNP for defense. Therefore, it has been harder for South Korea to respond to increases in cost sharing compared to our other allies, who spend smaller percentages on their defense. However, this year's cost-sharing increase doubles last year's commitment, and the ROKG has agreed to begin assuming some of the cost of host nation workers. Moreover, the ROK has been forthcoming in agreeing to future increases, although the formula for configuring those increases is still being determined.

Recognize, however, there is a difference between funds allocated to cost-sharing and funds allocated to defense improvements. Increases in cost-sharing per se do not contribute to improved defense—they may improve relations between allies, but there is no positive increase in the ability to defend—only a substitution of who is paying which bills.

In my role as the combined commander, I am concerned primarily with the overall balance of forces on the peninsula. Deterrence relies on continuous improvements and modernization that make perfectly clear to the North Koreans they have no prospect of success. The dramatic improvements to North Korea's forces that occurred over the past 10 years have not been matched by South Korean forces.

The Republic of Korea faces difficult economic choices. Despite the economic trends mentioned earlier, South Korea is not yet a wealthy nation. South Koreans are on the brink of economic success, but their regional competition is fierce. Infrastructure investments are desperately needed if the future is to mirror the past 10 years. In addition, the growth of democracy brings with it strident new demands from a voting population for social and environmental reforms and welfare programs which previously were virtually nonexistent. Moreover, South Korea's pie is not very large—the entire GNP of the ROK is smaller than the defense budget of the United States. Last year's total annual governmental budget was only slightly over $40 billion, and the 1990 defense budget was about 28 percent of that sum.

Moreover, any assessment of their commitment must be tempered with the realization that the ROK maintains a universal draft and the commitment of their population, both proportionately and absolutely, is impressive. One of every eight citizens is a serving member of the armed forces, active or reserve. They are also making significant increases toward the amount of monies allocated to foreign aid—to the United States for Desert Storm, as well as to the Soviets and Eastern Europe as part of the Nordpolitik policy—an aid program which complements U.S. objectives globally.

Notwithstanding the urgency of these demands, there is also a pressing need for capital investments in the defense area. Our forces are well sized to the threat—there is no need to increase the size, but there are many capabilities that are needed to defeat North Korea's forces more efficiently and at a lower potential cost to our populations. As a result of Desert Storm it will be possible to direct future purchases with a greater degree of confidence toward systems that had high battlefield payoff against Iraq.

OPERATIONAL PRIORITIES

The resources provided to the command in the 1992 and 1993 Presidential budgets will sustain the accomplishment of the military objectives in the theater. The list of operational priorities based on analysis of existing deficiencies follows:

Command, Control and Communications: There are several programs in the area of improved C^3 which will have high payoff for the combined defense. The Army is supporting a family of simulation initiatives designed to lessen the dependency on large scale field exercises. Future evolution of this program will reduce costs and improve levels of training simultaneously. With the increasing urbanization of the ROK, future exercises will have to be designed to occur in smaller maneuver space and to minimize the burden on the civilian population.

Intelligence: One of the areas of continuing ROK dependency that will exist over a long-term period is strategic and operational intelligence. U.S. assets in theater are vital not only to any warfighting effort, but also during armistice, given the need for early warning against an increasingly offensively oriented North Korean force. We have asked for improvements in airborne and ground intelligence collection assets of several types, as well as processing and dissemination systems. These systems offer a reduction in the risk of a limited notice attack, and will be essential to properly execute our planned defense.

Readiness and Sustainability: The most serious operational deficiency remains in the area of sustainability. Given the vast distances to the northwest Pacific, and the early need for large scale reinforcements, the shortage of in-theater sustainability will exacerbate the already serious problems of strategic mobility. In particular, there is a need for an expanded stock of modern munitions capable of defeating enemy armor, as well as artillery in hardened facilities. There are shortages of preferred munitions and counterair munitions which will be particularly essential in the opening days of a conflict. Prepositioned War Reserve Stocks also remain a high priority. Inadequate stocks of major end items, repair parts, spare parts, and medical items persist. In hand with these shortages are insufficient storage facilities for war reserve stocks.

Mobility: The command echoes the Chairman and Secretary of Defense in their priority for expanded strategic lift. The lifeline for reinforcement and sustainment of United States Forces Korea is too long; increases in strategic lift will not shorten the line, but will increase the tempo of augmentation considerably. Both the C-17 and fast sealift programs are badly needed to correct existing deficiencies.

IMPLEMENTATION OF GOLDWATER-NICHOLS

The implementation of the Goldwater-Nichols bill is a success story. With regard to the influence and authority of the position of unified and specified commanders, there have been no problems. The services have been responsive to all requirements and the joint staff has been supportive and helpful. Even in the face of decreasing budgets and the necessary prioritization of resources toward Operation Desert Storm, I have been pleased with the continued support for USFKs command initiatives, as well as my continued ability to influence the apportionment of resources within theater.

The quality of officers assigned to joint duty positions is also reassuring. This is true with regard to the officers assigned to the Joint Staff with whom we work every day, and those assigned to the joint staffs in theater.

The Goldwater-Nichols bill has had the desired effect of enhancing the CINCs authority as well as improving the quality of joint and combined staff work.

EFFECTS OF OPERATION DESERT STORM

To date there have been few serious effects as a result of the Desert Storm operation. We have had to make some adjustments, but our forces remain prepared to accomplish their missions.

The overall impacts have been fivefold. First, as I am sure all here realize, the deployment of a large U.S. force to another theater raises some concern. There is a window of opportunity or greater risk of North Korean aggression. As a result the ROK armed forces upgraded the readiness of selected forces. There have been, however, no indications that the north will attempt to take advantage of this situation. The continued presence of U.S. combat forces on the peninsula has served notice of our preparedness to respond to any attack.

The second effect has been the increased threat of terrorist activity targeted against American service personnel and facilities in Korea. There have been a number of measures taken in theater in response to the threat of terrorism. The ROK significantly upgraded their counterterrorism and protection programs to protect U.S. servicemen and bases. This has involved a considerable and costly effort, and the result to date has been no incidents. Also, we have imposed a system of curfews throughout the theater, designed primarily to reduce vulnerability and deny an element of predictability. Base security has been tightened throughout the theater through a host of measures.

Third, the Army's stop-loss program has been applied to prevent the loss of soldiers in theater, as it has Army wide. This has stemmed the potential loss that could have been incurred by the demands of Desert Storm. Replacements have continued to flow in theater to replace losses in other service components. There has been a minor drop in percentage fill of some units, and within some skill specialties, but there has been no appreciable drop in readiness.

Fourth, we have had to delay some of the programs which were planned for the theater, but I emphasize that these are only delays. Modernization programs, like the Bradley and MLRS for the Second Infantry Division, and the ATACMS have been pushed back about half a year.

Fifth, there has been a noticeable drop in the materiel readiness of combat and support systems. The necessary allocation of repair parts to Operation Desert Storm has resulted in a degradation of readiness rates.

However morale of our forces has remained high. In fact, the pride that all of our units on the peninsula feel over the success of our forces in the Gulf is tremendous.

The Republic of Korea has supported our efforts in the Gulf, and they have done so in the face of a very real threat to their north. We did not ask nor encourage the ROK to send combat forces to the Gulf, but they provided aircraft, ships, money and medical personnel. Including the funds provided to our Gulf allies, the total contribution to date totals about $500 million.

There is a particular aspect of Operation Desert Storm which should be highlighted. Kim Il Sung cannot have missed the exhibition of will, both from the United States and United Nations, in this effort to stop a tyrannical ruler who invaded a neighbor under the guise of historical ownership. It is a lesson relevant directly to his own ambitions on the peninsula. This is a powerful contribution to the continued effectiveness of deterrence on the Korean peninsula.

Notably, it is also compelling evidence of the reinvigoration of the United Nations in combating aggression. The United Nations Command, which still bears responsibility for the maintenance of the armistice along the DMZ, has been the recipient of enhanced legitimacy, stature and importance in this regard. The credibility of a United Nations response to an attack against the south has increased; a factor enhanced further by the Soviet's opening of relations with the Republic of Korea.

The multinational character of our deterrent capability in the Republic of Korea, represented by the United Nations flag, has increased in terms of viability and visibility. This aligns directly with the President's vision for the post cold war order, and assists combined forces in the accomplishment of their mission on the peninsula.

SUMMARY

The partnership between the United States and Republic of Korea, economically, politically and diplomatically, is a unique success story and the future is very promising. North Korea, in terms of capability, is a significantly more powerful threat today than 10 years ago, but international acceptance and support for the north's national goals are disappearing. There have been breakthroughs in the diplomatic freeze relative to the peninsula, but no decisive progress.

In a larger sense, there are many powerful influences operative in the region; some are beneficial to the accomplishment of U.S. objectives, and others stand in direct contrast. Clearly we have crossed the threshold where America is the singular advocate or regional model of democracy and free enterprise systems.

Despite continued dependence on the United States and United Nations to ensure their security, the Republic of Korea has launched on its own destiny. They have an understandable priority and commitment to the maintenance of stability within Northeast Asia, and are exercising national imperatives driven by their own aspirations. The South Koreans are reordering their relations with the global powers. They perceive the existing opportunities wrought by the end of the cold war, and are creating leverage for future stability. This benefits both our nations.

The vectors for transitioning the relationship between the United States and Republic of Korea have been laid. But there remains a degree of confusion over future courses. As the United States calls for the ROK to exercise greater independence, nationally and internationally, we must understand there are benefits and difficulties associated with this policy. We must exercise care that this confusion not lead to angered frustration, but instead toward constructive realignment. U.S. Forces Korea are attempting to ensure that the bonds between the Republic of Korea and the U.S. remain close and a source of strength to both nations.

Military presence in the Republic of Korea is an investment in the future. It stands as a bastion of Korean and American will and friendship on the continent of Asia and within a region of great power competition. This competition has acquired a new complexion over the past decade, and our relationship has become even more meaningful. If we have great expectations and demands on the future of Korea, in terms of influence, commerce and political partnership, the maintenance of close bonds will be a requirement for the realization of a more powerful and trenchant global role.

The maintenance of deterrence against North Korean aggression is an essential step toward this more brilliant future. Establishing a stable defense framework capable of responding to the challenges of the next century, and skillfully transitioning to this framework is a necessary benchmark to a stable regional posture. I appreciate your continued support for the command's efforts to meet these challenges.

Senator **Levin**. Thank you, General. In my opening remarks I mentioned the four basic force packages and four supporting capabilities that General Powell has developed and that Senators Nunn and Warner asked you to address in their letter to you. How do each of you see your command fitting into those force packages and supporting capabilities, and what would this concept mean in terms of roles and missions for your component commands?

General Joulwan, will you start?

General **Joulwan**. First of all, sir, I think the key part of that would be the Contingency Force as it pertains to the Southern

Command. I think that would contain the force packages that we would need, given the low-intensity conflict that we would expect in the Southern Command region. Also, an essential part of that would be the transportation elements, the sea and airlift, to rapidly get that force there and to have the versatility to be able to deploy the force in the time required.

So I think those would be the two components of the force packages that the chairman is referring to that would pertain to Southern Command, the Contingency Force, and the rapid sea and air lift to get it there.

Senator LEVIN. Do you foresee that your forces would be assigned to a new Contingency Forces Command and the Southern Command, then, would be either disestablished or would be a subunified command?

General JOULWAN. I have no information on that.

Senator LEVIN. You do not have any idea as to what he has in mind?

General JOULWAN. I know there is a review of the Unified Command Plan that is going on by the Chairman of the Joint Chiefs of Staff, but I have no more information on it than that.

Senator LEVIN. Okay. Admiral, do you want to comment on that?

Admiral LARSON. Yes, Mr. Chairman. I think the force packages are totally consistent with my Pacific area strategy which supports the national strategy. The Pacific package is essentially what I have now for in-place forces to handle my presence and my contingency missions. The four support packages are exactly the ones that I would need or would draw upon to enhance my theater capabilities. And I would view the Contingency Force as a reinforcement to me in a larger contingency that outstripped my capability to do that with theater forces. I find it very consistent with what I do today and how I see myself carrying out the Pacific strategy.

Senator LEVIN. Do you have any comment, General RisCassi?

General RISCASSI. As a subunified commander of CINCPAC I think the contingency force package plus the transportation package, are most germane, especially in light of the large standing force that we have on the peninsula. So I would echo exactly what Admiral Larson has said.

Senator LEVIN. General RisCassi, during a hearing last February before this committee, General Menetrey, your predecessor, said that the United States and South Korea were looking closely at establishing a South Korean ground forces command that would be headed by a South Korean general. He said the issue would be decided within a year. Can you tell us what the status of this separate command is?

General RISCASSI. I think it is a misrepresentation to call it a separate command. I think what General Menetrey was referring to was the Ground Component Commander of the Combined Forces Command. And that tenet is resident in the Nunn-Warner initiatives, and will be consummated by December 31, 1992. The Deputy Commander in Chief of the Combined Forces Command Korea, who is a Republic of Korea Army four-star general, will assume that mantle no later than that date.

Senator LEVIN. Now, is there some kind of an understanding that we have reached with Korea on that?

General **RisCassi**. Say that again, sir.

Senator **Levin**. Have we reached an understanding with Korea on that issue?

General **RisCassi**. Absolutely.

Senator **Levin**. Is that in writing, or is it just an oral understanding?

General **RisCassi**. It is in the Nunn-Warner report, and it has been agreed to in the various forums that I attend. There is no reluctance on the part of the Republic of Korea to assume that role.

Senator **Levin**. So the date, no later than December 31, 1992, is set forth in that report?

General **RisCassi**. That is the end of Phase I, December 31, and all actions should be concluded by that time.

Senator **Levin**. And that includes the specification of that deputy command?

General **RisCassi**. Yes, sir.

Senator **Levin**. And has that been transmitted in some formal way to the South Koreans?

General **RisCassi**. I am going to have to submit that back to you. I would say, yes, sir, but I am at a loss to tell you exactly what that documentation is.

Senator **Levin**. Would you submit that for the record?

General **RisCassi**. Absolutely.

[The information follows:]

Yes there is a formal agreement. Details of the Nunn-Warner military initiatives were agreed to on November 14, 1990 during the private session of the 12th Military Committee Meeting among the Commander in Chief, Combined Forces Command; Commander in Chief, U.S. Pacific Command; Chairman, U.S. Joint Chiefs of Staff, and Chairman, ROK Joint Chiefs of Staff. Recommendations of the Military Committee were subsequently approved by the Secretary of Defense and the ROK Minister of National Defense at the 22d Security Consultative Meeting conducted on November 15-16, 1990. One of these initiatives is the appointment of a Republic of Korea Army General as Commander, Ground Component Command of the Combined Forces Command. As reported in the November 30 Interim Report to Congress titled "A Strategic Framework for Asia: Looking to the 21st Century," the Deputy Commander in Chief, Combined Forces Command will be appointed as Commander, Ground Component Command no later than December 31, 1992.

Senator **Levin**. Thank you. The strategic plan proposed a reduction of about 5,000 U.S. troops over the next 3 years. Is that still in place?

General **RisCassi**. Yes, sir, 5,000 Army spaces and 2,000 Air Force spaces. That is still in place and will be concluded by the end of the calendar year 1992.

Senator **Levin**. Is there any change in the speed during that period? In other words, is that going to be delayed until the end of that period in any way?

General **RisCassi**. No, sir. The initial time lines that we have established to take the forces out in an orderly fashion will not be delayed beyond the December 1992 timeframe.

Senator **Levin**. Has there been any changes in the North-South relationship or in the threat in the peninsula in that last year?

General **RisCassi**. I think there has been some change in the relationship. As you well know, we have had three North-South dialogues, with the fourth meeting canceled because of Team Spirit 1991. We have opened a chapter on a book in the past year that had heretofore been closed, so there is always hope from that venue. The results of those negotiations were disappointing because there was no joint communique emanating from any of the meetings. It is unfortunate that no concrete understandings were achieved, and while confidence and stability building measures were presented, the North and South remain far apart in their positions.

We continually see the North's improvement of their armed forces; in terms of modernization; in terms of reorganization of their forces. These improvements have been going on since the 1984 timeframe. We do not see any abatement of those modernization initiatives, nor have they repositioned any of their forces back from their threatening forward presence.

Senator LEVIN. Overall, would you say the threat from the North is about the same, greater, or lesser in the last year?

General RISCASSI. It is about the same as last year.

Senator LEVIN. Thank you. Senator Mack.

Senator MACK. Thank you, Mr. Chairman.

General Joulwan, I would like to focus some of my questions in Central America, starting with Panama first. One of the concerns I think that was voiced a number of times in the aftermath of Operation Just Cause was what happens to the Panamanian Defense Force. What role does it play in the future of Panama? I would like for you, if you would, to address that in the sense of the building of a necessary security force to protect the Canal. What is its status now? What are your concerns about it? What concerns do you have about its political involvement?

General JOULWAN. Sir, the Panamanian Defense Force, after Just Cause, was disestablished; however, it was the only security element in the country at the time. So the majority of the current Panamanian National Police comes from the former Defense Force. What occurred was that the high-ranking officers of that Defense Force, all the lieutenant colonels, all the colonels, and most of the majors were removed.

I would say now that what we are seeing is an attempt to train civilian recruits, to merge them into this force to try to get a better balance. Last month on February 22, 232 new police recruits were graduated from their police academy and infused into this force. That is a very positive sign. But it will take time to develop the mix that you want where the majority will be civilian-based and not have any military background. So we do have some concern.

We had an incident on December 4 where there was an insurrection that took place with a former police colonel in Panama who escaped from prison and tried to lead an insurrection. There was some loyalty and some disloyalty involved in that, and the President of the Republic of Panama got rid of those who were disloyal and promoted those who were loyal. So it is going to be a slow building process.

I think it will have an impact on the Canal in the out years. That is why we—the U.S. and Panamanian Governments—are trying to stand up a Panamanian force in the next 9 years that can provide for the security not only of the people of Panama, but also for the Canal.

Senator MACK. You do believe it is possible to put together the kind of force that is necessary to protect the Canal but at the same time not become so dominant that it takes over the political structure again?

General JOULWAN. That is what we, the U.S. Government, are trying to do. And one of the discussions that I am going to have as soon as I return will be with International Criminal Investigative Training Assistance Program (ICITAP), which is a part of our Department of Justice. ICITAP is involved with training the Panamanian police—civilian agency training civilian police—to look at not just the urban police, but also, how do they secure their borders, immigration, counter-narcotics, as well as Canal defense. And we hope to be able to assist in standing up this force as we build our force down.

Senator MACK. Roughly, what is the size of that police force today?

General JOULWAN. 10,000.

Senator MACK. It is 10,000?

General JOULWAN. Yes, sir.

Senator MACK. And are all of the former officers, majors, and colonels gone?

General JOULWAN. Lieutenant colonels and colonels are gone. Some majors are there, but the majority—all of the senior ranking people of the former PDF—are gone.

Senator MACK. I would assume we would have a chance to go to additional questions later, so I may come back to some of those points.

General RisCassi, I just wanted to talk a little bit about Korea. I have seen some reports in the papers the last couple of days that indicate that the leader of North Korea must be somewhat shocked about this point in time after seeing what happened to the Iraqi military capability.

The assumption being made there is that North Korea has basically the same kind of military hardware and I assume, operates with similar Soviet doctrine, and that seeing both of those decimated on the sands of Iraq must make them somewhat uncomfortable.

Is it fair to conclude that we should consider the risk to the South, either overstated in the past or reduced as a result of what we saw in the Persian Gulf?

General RISCASSI. The short answer is, no, you should not reach that conclusion. Just to talk to that question a little bit, I think it was a fair reflection in the news articles, when they made the judgment that Kim Il Sung should have been and probably was chagrined at the success of the U.S. and multinational force in Southwest Asia. He does enjoy the same types of fighter aircraft, the same types of ground systems, and to some extent, the limited naval assets of the Iraqi forces; he is apt to be disturbed at their poor performance against the multinational force.

However, he has a different dimension that ought not to be minimized, in terms of how his forces are postured and arranged in force dispositions. Kim Il Sung enjoys a timing significance that makes the situation different from Iraq. In other words, he says when it starts and it begins under his conditions.

So unless we have that finite acuity into what is happening in the North, to be on a level playing field with him, we will always be a half a beat behind because he will control the timing.

That is why it is so important to have things like JSTARS resident in the kit bag of flexibilities for the forces, to ensure that you can level that playing field when somebody enjoys the significant advantage of calling the timing.

So I think the short answer, I would still say, no, sir, you should not draw that conclusion.

Senator LEVIN. Thank you, Senator Mack. Senator Cohen.

Senator COHEN. Admiral Larson, there was an item in today's Washington Post that suggests that Japan is looking to fill a new role, that of a pacifist nation, basically. What is your reaction?

I notice in your written statement you say Japan is perhaps the linchpin for the United States in that part of the world. What do you perceive as the role that Japan is going to play? The article goes on to point out that there was a strong mood of pacificism and absolute opposition toward our effort in the Gulf prior to the war itself, and after the success it has changed around a bit. But how do you see Japan playing a role?

Admiral LARSON. Well, Senator, I think first of all, our security relationship is the linchpin. Our mutual defense arrangements help them, in conjunction with the United States, defend their sea lines of communication out to 1,000 miles. These agreements are a powerful force for regional stability. And in their budget process, the things that I see in their new plan support that and support a continuation for their next midterm defense plan.

I think what we are seeing is an internal reassessment or reevaluation of their Persian Gulf support within their constitutional system. I think this will be a significant political reappraisal.

Senator COHEN. We have said frequently, at least prior to the war, that Iraq had the fourth largest army in the world, but we also have frequently said that Japan has the third largest expenditure for military in the world. Is that going to change in your judgment? If America is going to be the world's policeman, which we might disagree with, maybe Japan can become the world's social worker.

Do you see them cutting back in their defense expenditures and trying to become more of a social worker, with more foreign aid going to various parts of the globe, rather than toward a military commitment in this U.S. relationship?

Admiral LARSON. What I see right now, Senator, is stability or a level funding in their defense budget and a continuation of their current policies, which also includes an economic dimension, of economic assistance to less privileged countries. I do not see any signs right now that would tell me there is likely to be a radical shift in their policy.

Senator COHEN. You talked about maintaining a forward presence for the Navy. Are you aware of Admiral Jeremiah's testimony before the House Armed Services Committee?

Admiral LARSON. Yes, sir, I am.

Senator COHEN. In which he talked about one aircraft carrier being homeported in Japan; one aircraft carrier unit, battle group for Europe.

How does that really compare with a capability, traditional notions about force projection? Do you really think that the Navy can project force with one carrier group homeported in Japan and one in Europe?

Is this not going to redefine the whole concept of force projection, more of an evolution back to what took place after Vietnam when we had a similar reduction in the number of aircraft carriers down to 12. We had, I think, an evolution from the Navy being a force projector to sea control. And it seems to me that that is the direction that we are headed in, as being not force projection, but sea control.

Admiral LARSON. I did not read it that way, Senator. When I looked at his specific package, he had the one carrier homeported in Japan, but he had five carriers homeported on the West Coast, which is essentially the package that I have now, after the U.S.S. *Midway* is decommissioned.

I would look at that as a continuation of our forward presence, our surge capability and our force projection capability, in that those five carriers would provide me an additional deployable force to be used within the region as a surge capability in case of crisis. So I would see a continuation of our current strategy.

Senator COHEN. With the loss of the A-6 and the cancellation of the A-12, what kind of strike force are you going to have on those carriers now?

Admiral LARSON. Senator, one of my most critical needs right now is the replacement for the A-6. Certainly, I do not think anyone would disagree with the requirement. The issue is how do we fulfill that requirement.

Senator COHEN. What do you think we should look for in terms of replacement now for the A-12 and funding the R&D budget? What should we be looking for?

Admiral LARSON. I think we need an interim replacement, as the A-6 reaches the end of its useful life. Ultimately, in my view, we need an AX type of capability which is a capability that had many of the attributes of the A-12. Specifically we need range, payload, and Stealth.

That is really the way of the future for attack aviation, and power projection capability.

Senator COHEN. General Joulwan, I do not want you to think I am ignoring you here. I am going to get to you right now.

First, let me ask you, with respect to the operation in Panama, how do you feel that the Goldwater-Nichols bill helped you out?

General JOULWAN. Excellent. I think it provided the cooperation and clear lines of command and control. I think we learned a great deal from the necessity that all of our planning as well as our execution needs to be done in a joint format.

Senator COHEN. So a little micromanagement by Congress helped out in that case, did it not?

General JOULWAN. I am sorry? [Laughter.]

Senator LEVIN. Let the record show that he nodded vigorously.

Senator COHEN. In the affirmative. Page 8 of your testimony, you mentioned a concept about Southern Command's focus on assisting host nations and you indicated they have to work closely with Ambassadors and the country teams and numerous other agencies.

And I think you were touching upon the interagency process. How do you think that is working? We had, as you know, proposed a LIC Board, Low Intensity Conflict Board, and there are still confusing reports in terms of how that is performing. The board itself has not been meeting. They have had sub-groups, but there appear to be some questions remaining as to the function or the functioning of that particular board.

How do you see it from where you are?

General JOULWAN. Well, my comment in the statement was really referring to the interagency cooperation that is needed in the counter-narcotics area. We have got about 50 different agencies involved and it is trying to focus that effort in the most productive way.

Senator COHEN. Let me just read your statement, in the nontraditional threats, that is not only counter-narcotics, that is counterinsurgency is it not?

General JOULWAN. Yes.

Senator COHEN. Low intensity conflict?

General JOULWAN. I find it working well in the other areas. I have no problems with the interagency cooperation that is going on. When I talk about interagency cooperation primarily I am talking about working with the country team that the Ambassador has, that has many of those agencies within it.

I have no problems in the other areas, Senator.

Senator COHEN. Thank you. My time is up. Thank you, Mr. Chairman.

Senator LEVIN. Thank you, Senator Cohen. Senator Smith.

Senator SMITH. Thank you, Mr. Chairman.

Admiral Larson and Generals, I apologize, I was speaking on the floor in support of the supplemental appropriation bill, so it was a good cause.

Admiral Larson, I had the opportunity to serve under one of your predecessors during the Vietnam war in CINCPAC so I would like to start with you. If current budget projections prevail and some of us hope they do not, we will wind up with a 450-ship Navy.

Could you comment on how this will affect your mission in CINCPAC?

Admiral LARSON. Yes, sir, Senator Smith. The Pacific force combatant package as we envision it in the next 5 years will be six carrier battle groups and the associated support ships. I feel I can carry out the Pacific strategy for that period of time and for the future with a couple of caveats: that the world situation will continue to be favorable, in other words, the Soviets will continue to move toward democratization; and that we will move into a multipolar world, out of a bipolar world; we will have warning time for a global war scenario; and that my strategy will continue to support regional stability, presence, access, influence, friends, and deterrence in the Pacific region.

I do feel though that the force level is about at the break point to maintain superpower status, if we are going to remain engaged out here in a military sense. That force package is about the limit.

It will also, I should caveat that and say, it will also take some real innovation, and new thinking on our part in how we employ and deploy those forces. We are going to do some things differently than we have in the past.

One of the things that I have my Pacific fleet commander looking at, and in fact, I was looking at it for the last 9 months while I was the Pacific fleet commander, is training our battle groups and amphibious ready groups—working up together—as we have traditionally, but as they deploy, breaking them into modules that can go places and do exercises, have presence, work with our allies, do port calls, knowing that in a contingency we could bring them back together into a power projection force.

I think these are the types of things we must look at as we continue to maintain our access and influence with smaller numbers in the future.

Senator SMITH. They are huge caveats I might say. When Secretary Cheney testified before the committee on an earlier date, and was asked if, under the current budget projections, if we had a similar crisis, could we react as quickly and as decisively, and do the job as well as we did. His response was probably not.

I would like to follow up on that with a question concerning the Philippines. I know you have a brief comment about it in your statement here, but I do not know if it came up before I got in here or not. Regarding our bases in the Philippines, you seem to be somewhat more optimistic in your statement about a settlement there than what I have heard reported.

I do not want you to get into any sensitive matters, but whatever you can say here in the open session. Do you feel relatively optimistic that we are going to be able to continue to hold those bases?

Admiral LARSON. Senator Smith, I am probably more optimistic now than I have been in the past, that the negotiations appear to be going down a road which is resolving a lot of the smaller issues. The negotiations have taken the philosophy that we really are looking at a shared security partnership, rather than a host/client relationship, and that it is in the interest of both countries to have our presence there, both for regional stability and mutual security. It appears to me that the negotiations are narrowing in on compensation and duration. Those issues will probably be high level governmental decisions as we get down to the final negotiations.

Having talked to the negotiators recently and looked at how negotiations are headed, I am optimistic we will be able to get a favorable resolution that will support our interests and the interests of the Philippine nation.

Senator SMITH. One final point. Assuming the worst, and let us say that for whatever reason, it did not work out, I would just like to hear your comment on how that would affect the national security of the Philippines? I recognize that they may not agree with your assessment.

And also, where would we compensate for those assets? Do you feel that we could compensate at other locations? Obviously, it would not be preferable, but could we compensate for them and still not work to the detriment of your mission in CINCPAC?

Admiral LARSON. Senator Smith, I think it certainly would have a detrimental effect on their overall security. There is a lot that we provide that enables them to concentrate on the insurgency that is currently ongoing in the Philippines and also frees them from any regional threats.

There are certain things that both locations and facilities provide us that we cannot replicate elsewhere. The strategic location right on the crossroads to the Indian Ocean and the crossroads through the Pacific, obviously is important. Also, the training facilities are the best we have for combined arms training anywhere in the Pacific. We do about three-fourths of our Western Pacific training there.

The ship repair facilities are also quite critical. Some of these could be relocated elsewhere. The problem is nothing will replicate what we have, and it will be very, very expensive, to me this does not appear to be a very propitious time for large investments in new facilities elsewhere.

The bottom line is that we would make do with less and we would lose some things that are quite important to our strategy if we left that location.

Senator COHEN [presiding]. Thank you. Senator Lott.

Senator LOTT. Thank you, Senator Cohen.

I was late getting here and I apologize. I did not get to hear all of your remarks, but just a couple of questions.

I believe, Admiral Larson, you were questioned just as I came in—or made some comments about—the ammunition, spare parts, and all that was used during the Persian Gulf conflict. But what are we going to need to do, or what are you doing, to make sure all of those are restored or restocked?

I understand, maybe there are some funds in this supplemental for that, but there is still going to be a need for more.

Admiral LARSON. Yes, Senator Lott. We have an ongoing evaluation and assessment right now. One of the first steps is to get the things that I provided that were not used back in our lockers. Then do an inventory. As our ships return, start looking at the spare parts that were used and at the deferred maintenance. You know, our readiness over there was superb. I am really, really proud of that, but part of that readiness price was deferred maintenance.

So we will have to look at that, and then reassess the balance. We are going to have to resupply some of our preferred munitions. That is an ongoing assessment. It is a very important one, to get a balance back into my theater. The first step is to get the things we have back, level out the supplies that we had enroute, and then make an assessment of where we need to go in the future.

Some of this is covered in the supplemental. The rest will be a very critical item for us in our logistics area.

Senator LOTT. I have a broader question for the Navy. In talking about where we are headed in the future—the numbers and types of ships—I saw an article yesterday indicating that maybe the Navy and the Pentagon are finally waking up and beginning to make an effort to get some more merchant ships, aside from fast sealift, which you know, the Pentagon did not use the funds we provided. But what bothers me is I am still concerned that the Navy and the Pentagon are saying, well, we are just going to have to live with 450 or 460 ships and we will have to make do.

I feel very strongly that we are just cutting based on the dollar numbers, without looking at what our real needs are and types of ships that we really should have, not the carrier question, but LHDs and others.

I mean, what kind of back-fire are you building? Why should the Navy just accept these numbers? I realize you fight within the Pentagon and when you lose, you got to come up here and support it, but I do not think you should.

I think if you feel like we are not going to have adequate ships or an adequate Navy to do the jobs, you ought to be up here telling us.

Admiral LARSON. Well, Senator Lott, we certainly have made an input. I make an input through my integrated priority list and I do have a good input under Goldwater-Nichols into the budget and the POM process. I think we have a system out there that helps us integrate our requirements across all services in the Pacific and make that input.

If I take the assumptions that we have made in our national strategy about a global war, the ability to have warning time and also to mobilize, when I look at the Pacific force package, as defined up to 1995, based on a 450 ship Navy and six carrier battle groups, yes, I would like to have more.

That package will meet the needs, but meet them barely. What it does not take into account would be unforeseen things, requiring a surge capability that might drive our requirements higher.

I think it is important that as we proceed down this path to 1995, we have to have continual reevaluation of the world environment, the national security environment, and also the effectiveness with which we are carrying out our strategy. And I think we have the flexibility to do that.

Senator LOTT. Did we learn anything from this Desert Storm experience that would cause us to reevaluate the policy we have been dealing with for the past 2 years of just cutting dramatically the military across the board?

I have been saying that I hope we can stop the free-fall, based on some of the things we learned from this experience, but I do not hear it so far from the military experts, generals, and admirals that we have had up here.

Admiral LARSON. Senator Lott, I certainly feel that there were a lot of lessons learned out of Desert Shield/Desert Storm. I think one of the primary ones that concerns me right now is the rate at which the personnel reductions are taking place, particularly with the stop-loss and some of the people we have on board now.

I would hope that we would be able to get either a deferment of those numbers for 1991 or a restructuring of that curve, so that we do not bring people back and shake their right hand and hand them a RIF notice in their left hand. I think it is really important that we take care of those people.

There are also many lessons learned that go from weapon systems and force levels, all the way into strategic mobility which is sealift, airlift, and prepositioning, which will be very valuable.

I believe it is a remarkable opportunity for us, as we bring forces back and restructure, to restructure smartly so that we end up with a capability at lower numbers that will be flexible, be responsive, and be able to fulfill our needs.

Senator LOTT. Would the General like to comment on that last question?

General JOULWAN. In my case, Senator, in the Southern theater, it is really a low intensity conflict, which is of greatest concern. But I would echo what Admiral Larson has said, that when we do build down the force, it ought to be a better force. It ought to be a higher quality force. It ought to be a more responsive force.

And as we look at the threat, particularly in my area, it is those sorts of forces that we are going to need in the Southern Command; responsive, well-trained forces that are trained and ready at day one. I think those ought to be the requirements as we build down the force, based on the threat.

General RISCASSI. Building down the force, in coincidence with the stop-loss, is a dynamic that is going to rupture all of the quality and readiness indicators we have in place. In my estimation, if we do not get some relief in getting back to the glide path to reach the target numbers that were to be achievable in the 1995 timeframe, you will have problems.

Senator LOTT. Just one last question, since we do not have a large number——

Senator COHEN. I was going to suggest to the Senator from Mississippi, now that the Republicans are in the majority here in this room, we ought to amend that resolution right now.

Senator SMITH. I second that. [Laughter.]

Senator LOTT. Japan is criticized quite often in Congress for not doing enough in the area of burdensharing, but I understand there has been a recent agreement which would significantly increase Japan's contribution to U.S. forces in Japan. What is in that agreement?

Admiral LARSON. Well, Senator Lott, I would agree that Japan should and can do more, and I think they have started that trend with a very positive move this year. They have agreed essentially to pick up all labor and utility costs by 1995. This will bring them up to about 50 percent of our stationing costs from 40 percent. It will be an increased payment on their part of direct costs of almost $1.6 billion or $1.7 billion over that period of time that they are not providing now.

That is a significant step in the right direction. We are working harder with the Japanese Government to ensure that those trends stay in that direction.

Senator LOTT. Thank you.

Senator COHEN. Senator McCain.

Senator MCCAIN. Thank you, Mr. Chairman.

Admiral Larson and Generals, you should understand that we will be waiving the 1991 end-strength requirements, so that is not what bothers me or I think what the thrust of Senator Lott's questions are.

Let me put the question this way, because even though we will waive the end-strength requirements, we are basically locked in for at least a couple of years as to the size of the Defense budget. It is like squeezing a balloon, it is going to have to come out someplace.

My question is that looking ahead at the budgetary mandates under which we are operating, and what level you see the Defense budget in 1996, do you believe that Desert Storm could have been conducted in the same fashion which we conducted it, from your observation point. I would like to start with you, Admiral Larson.

Admiral LARSON. Senator McCain, I think the answer to that is no. We would not have been able to replicate the exact support that we gave this time in 1995 with the reduced numbers and reduced forces. It looks as if that is a risk that we will have to take, as concerns our ability to respond to future crises or perhaps head them off.

Senator MCCAIN. General Joulwan.

General JOULWAN. I would agree that it would be very difficult to replicate. My last command was in Europe, and we took nearly 100,000 soldiers out of Europe to send to the Persian Gulf. I would say that would be very difficult to do in the future.

I think the response time may be improved if we can get, between now and 1995, some of the sea and airlift that we need. That is what I am saying about the quality of not only the force, but the sea and airlift and all the other pieces of that, that give you the ability to respond and respond in a real-time way.

General RISCASSI. Looking at the numbers we have all been exposed to I do not believe, Senator, that you could execute a Desert Storm in the timely fashion that it was executed out in the 1995 timeframe.

But what also worries me will be our inability to maintain a sufficient deterrent in the rest of the world, if you have a simultaneous execution in another theater. It is going to be very difficult to manage that through that time window of 1995, and still come up with the requisite force structure.

Senator MCCAIN. We are all in agreement that one of the lessons, and there were many as General Joulwan just stated, we need to enhance our sea and airlift capabilities. All three of you are in agreement.

But yet, except for the C–17, we do not really see much of that in the service budgets. Any disagreement, Admiral Larson?

Admiral LARSON. Senator McCain, we have some monies, you know, that we have not spent yet, that I think will be spent as soon as the sealift study that is due at the end of this month comes out. There is wide agreement in the Department of Defense that we need several things. We need to build up the RRF. We need some roll-on/roll-off ships in our inventory that can carry our heavy equipment. We need an enhancement in our fast sealift, in addition to some rejuvenation of our Merchant Marine which is outside OSD and is a national program.

And I think——

Senator MCCAIN. If you have some money left, do you think you have enough money left to fill that menu that you just described?

Admiral LARSON. Well, except for the Merchant Marine part, I think we will be investing in all of the other three areas here.

Senator LOTT. Would you yield on that?

Senator MCCAIN. Absolutely.

Senator LOTT. We have been asking the Pentagon and the Navy about fast sealift for the last 2 years. We raised questions about the Ready Reserve. We asked about the row-row, and everybody always says, oh, yes, we need it, we need it.

But now are we going to finally do something about it? Is the Navy going to lead on out or are we going to have to do it for you?

Admiral LARSON. Senator Lott, I think we are going to do it. It is like Goldwater-Nichols, we have finally seen the light. Desert Shield has really given us a graphic illustration of the real world deficiencies in sealift. Everybody I talk to is on board and marching off and trying to improve that situation.

Senator LOTT. Thank you.

Senator McCAIN. This hearing has degenerated in your absence, Mr. Chairman.

Senator LEVIN [presiding]. I rushed back. I heard rumors. [Laughter.]

Senator McCAIN. Let me follow-up if I could, Admiral, in all due respect to you and the Generals, we have to do more with the money that is left over. It seems to me that we need to shift funds from areas of defense, that in light of the changed conditions in the world are either unnecessary or are not as critical as they were in the past.

I believe that there are certain strategic systems which are no longer as necessary as they were in the past, and I think we have to look at that, if we are going to come away fulfilling some of the requirements that we have found are really significantly lacking in light of the Desert Storm crisis.

One of these systems, Admiral Larson, is whether we really need another class of attack submarine, given the draw-down in Soviet operations in the Pacific, given the fact that the *Seawolf* is enormously expensive.

Is there the same requirement that there was 3 years ago, when we contemplated the requirement for the SSN-21 program?

Admiral LARSON. Well, Senator McCain, what has changed in the last few years since we started the SSN-21 program is that the Soviet intent, apparently has changed. I think there is probably little chance that they will make a political decision to use their military power. However, my concern is that their capability has not changed in the submarine area. Particularly in their attack submarine area and in their modernization programs. They have continued to produce numbers, tonnage and very, very capable ships of the *Victor III* and *Akula* class.

Everything that I have seen tells me that their submarine force is a pretty first rate outfit. We need to have the ability to deter that if necessary. We also need to maintain the technology base to produce the types of systems, that if needed, can be called upon to do that.

We do need that submarine. I think the reduced numbers of that submarine really shows the Navy's desire to reduce the funding. This allows us to maintain the technology base for expansion in the future, reconstitution if you will, of a very potent capability.

Senator McCAIN. I am not in disagreement with the need for innovative technology, but would your answer not be complete without comment on the significant reduction in Soviet naval operations in the Pacific?

Admiral LARSON. Are you saying, Senator, that they have greatly reduced their operations in the Pacific? That is true, they are operating at about 10 or 15 percent less, but it is close to home. What they have really cut out was transit time. They are still doing a lot of training, but they are doing it much closer to home. I still think their submarine force is a very ready force.

Senator McCAIN. Thank you, thanks to all the witnesses. Thank you, Mr. Chairman.

Senator LEVIN. General Joulwan, you made some references to Panama and the treaty and the transfer of the canal. Is there any idea at this time about talking to Panama about extending the treaty?

General JOULWAN. At the present time, no. I think 1 year after Just Cause, 1 year after, a very fragile democracy now exists in Panama. I would say that what we ought to be doing is talking in terms of getting on with implementation of the treaty.

There has been some talk among Panamanians about some degree of—I hesitate to use the word renegotiation. I think that is premature. I think what we need to do is allow this government to mature some more and get them to realize the complexity of what we are talking about. I took a whole group of Panamanian officials on a terrain walk, a tour of all the facilities, the President, the Vice President and a cross section of government and industrial leaders, Panamanians, to let them see the complexity of what we call the Canal and the former canal zone.

That was about 6 weeks ago. That had a profound impact on the Panamanians and for the first time I think they realized how complex it is. And so we are trying to walk down that path with them. I would like to say that perhaps after the 1994 elections, that perhaps that subject would be best addressed then, not now.

Senator LEVIN. Is it your belief, as of this point, that they will be able to operate and defend that canal at the end of the decade?

General JOULWAN. Let me take that in two parts. The operating part of it, I think they are well on their way. Last November they appointed a Panamanian administrator to run the canal. I have met with him. I have watched him operate. He is excellent.

Eighty-seven percent of the Panamanian canal work force is now Panamanian. So on the operating side of it, I think they are well on the right track to be able to operate the Canal by the year 2000.

Defending it, as I mentioned before, they are not there, and the answer to that is no. They are not ready to defend the Canal.

Senator LEVIN. Do you believe they will be ready by the end of the decade?

General JOULWAN. That is the question that we are talking about, whether Panama can develop a Panama Canal security force capable of defending the Canal.

The Panamanian chief of police, Mr. Asrats, was recently quoted as saying he needs 1,400 Panamanians to make up a canal defense force. So they are thinking about it. We are trying to work with them.

But first of all, Panama must start graduating these recruits from their new police academy, and as I said, our Department of Justice is helping train those civilian police. I think in the long run, in the 9-year timeframe, I am confident that they can have a canal defense force that will be capable of defending the Canal.

But even after that, it is a joint Government of Panama, Government of the United States responsibility.

Senator **Levin**. In reference to Senator Cohen's questions about Japan and their defense effort, can you be a little more specific? There has been a great deal of discussion about whether they are going to be able to protect sea lanes out to 1,000 miles. They have made that commitment by a certain year. Are they going to be able to keep that commitment? Are they on schedule?

Admiral **Larson**. Senator Levin, I think they are on schedule. Until they achieve that capability under security treaty, obviously, we can help them. We can defend the seaplanes together.

But the modernization programs that they have in their current mid-term defense plan are certainly headed in that direction. With the *Aegis* capable destroyers, the AWACS and things like that, plus the ship modernization, it is heading in that direction.

As to the exact year that they will be able to do that, I can't predict that right now. But I will say that the trends are positive, and we need to make sure that their investments keep them headed in that direction.

Senator **Levin**. Did they not make a commitment to defense sea lanes out to 1,000 miles by a certain year? Was there not a year certain that they made a commitment to as of a year or so ago?

Admiral **Larson**. I am not sure, Senator, as to the exact year, but I can provide that to you for the record.

[The information follows:]

JAPANESE SLOCS

During a press conference in 1981, then Prime Minister Suzuki made a very general statement that Japan would undertake responsibility to defend its sea lanes out to 1,000 nautical miles. This verbal pledge has not been further defined nor followed by any written agreement. While this pledge has never been quantified, acquisition of systems from the United States, such as AEGIS and AWACS, will significantly enhance Japan's ability to perform its vital SLOC defense function in conjunction with our own naval forces. Continued U.S.-Japan security cooperation remains a valid long-term requirement. The current division of roles and missions frees U.S. forces to promote regional stability beyond the 1,000 nautical mile zone. Continued forward basing in Japan places U.S. forces in an ideal location for regional security roles and the majority of costs are offset by Japan's enhanced Host Nation Support Agreement.

Senator **Levin**. What about this magical 1 percent defense budget of theirs, GNP? They were over it, by some accounts but not by others, now they are back under it. Where are they on defense spending? Are they increasing it, decreasing it in real terms? Where are they relative to that 1 percent?

Admiral **Larson**. Senator Levin, they are still increasing their investment in defense by a percentage each year.

Senator **Levin**. In real terms?

Admiral **Larson**. In real terms. If you reference it to the gross national product which, of course, can vary, they are staying fairly consistently right near the 1 percent mark. In real terms it is, as I recall, about a 3 percent real growth. And it has been between a 3 and 5 percent real growth each year for the last several years.

Senator **Levin**. General RisCassi, you have made some reference to South Korean burdensharing. You gave us a certain figure, I believe you said it was $70 million in 1990 and $150 million in 1991. Excluding U.S. personnel costs, what percentage of U.S. costs does South Korea now offset?

General **RisCassi**. Let me see if I can back into that answer. In 1990, out of $70 million, $40 million was for combined defense improvement projects, military construction, et cetera. Eleven million dollars was for war reserve replenishment, refurbishment; $12 million was for maintenance, specifically, aircraft maintenance; and another $7 million, for the remainder, was for communications enhancements.

But these are not the numbers you are looking for. I will provide that for the record.

Senator **Levin**. Fine.

[The information follows:]

The U.S. Government incurred total costs of approximately $2.643 billion in 1990 and project costs to be $2.624 billion for 1991 to station U.S. forces in Korea. Of this amount, $1.725 billion represents military personnel costs in 1990 and $1.715 billion in 1991. The remaining costs include operations and maintenance, family housing operations, military construction costs, etc. The ROK Government committed $70 million in direct contributions to the stationing of U.S. forces on the peninsula in 1990. These direct contributions reflect 7.6 percent of U.S. stationing costs less military personnel costs. In 1991 the Korean Government is contributing $150 million which represents a direct contribution of 16.1 percent of projected U.S. costs.

The value of ROK indirect contributions (real estate, personnel support, augmentation, etc.) is significant. When factored in with direct contributions, the resulting ROK commitment to support of U.S. forces in Korea is considerably larger than viewing direct contributions in isolation. In other words, the rather sizable costs assumed by ROK indirectly, in terms of opportunity costs for real estate and facility use, when considered as a contribution alters the ratio of percentage of costs assumed by a considerable factor. Additionally, the Republic of Korea has shown commitment to improving its defensive posture and historically expends 28-29 percent of the annual Federal budget on defense, as well as more than doubling its contribution to cost sharing over the last year.

Senator **Levin**. Senator Mack.

Senator **Mack**. Thank you, Mr. Chairman.

Admiral Larson, I would like to pursue some questions along the line of the Soviet capability. You mentioned Soviet air power and sea power in your comments. I want to get a feel for that. Is that a growing capability? Is that a capability that is expanding at a time when I think that most Americans believe that there is a cutback in military commitment on the part of the Soviet Union?

Admiral **Larson**. Senator Mack, in the naval sense, they are not doing a 1-for-1 replacement. They are pulling out more ships than they are bringing in. However, the ships that they are bringing in are very modern. They are new. They are high technology, and they are very capable.

They brought in a SLAVA cruiser, a Sovremennyy guided missile destroyer, and a UDALOY guided missile destroyer this past year, along with the number of submarines. So, their capability in a qualitative sense is getting better, and their numbers are getting smaller.

It is not too much unlike what we are doing. As a matter of fact, when I visited Vladivastok with our Navy ships in September I talked to my Soviet Navy counterpart, the Chief of their Pacific Fleet. We were both struck by the similarities in the fact that our structure was going down, but we were replacing older ships with newer, more modern, more capable ships.

Senator **Mack**. But here is my point, and at least my understanding of the difference between our two nations with respect to our needs, for example.

We are a country that relies, as I understand it, on a lot of international trade, and sea lanes are very important to us. That is not necessarily the case with the Soviets.

One of the things that, frankly, I have been asking myself as I have been observing what has been happening in the Soviet Union, no longer is a question are there changes taking place since 1986, let us say, but for what purpose are the changes taking place.

The question that I am trying to get to is one of whether the Soviets are really restructuring their society for the purpose of strengthening their industrial base so that they can continue an expansionist foreign policy? It seems to be that one of the things that you look at in trying to determine whether the Soviets are interested in some point in expanding their world dominance is Navy capability.

I am wondering why they are going through what they are going through at this point if the Soviets intent is truly internal?

Admiral LARSON. Senator Mack, what I see right now, as I look at their defense expenditures and the reduction in their defense expenditures, is mostly a restructuring of ground forces at this time. I do not see the reduced momentum yet in their naval forces, their strategic rocket forces, their air defense forces, and some of their air forces.

Now, you could question whether that is a delay in shutting the valve and still having things come out the other end of the industrial pipeline, or whether that is a policy to continue to produce in these areas. But the quality in the areas and the capability in the areas that I mentioned continue to be enhanced.

Senator MACK. Let me just ask a follow on, then. Is there a greater risk to you today because of the continued expansion of the Soviet naval capability?

Admiral LARSON. Senator Mack, I would say that the capabilities produce a risk, but I do believe that there is much less of a chance that they will make a political decision to use that capability. Therefore, I do believe that it is a less threatening environment because of that intent.

Senator MACK. I would suspect that probably is a reaction that most of us have. I am not sure that I share that conclusion yet, but they are continuing to expand their military capability. We are of the opinion, at least, at this point, that military capability is probably not going to be directed at us.

Admiral LARSON. That is correct. Senator Mack, I think one of the things that really makes me feel that it is less threatening, one of the dominant features, was the break up of the Warsaw Pact. Once the Warsaw Pact ceased to exist, they are no longer globally threatening, of threatening global war.

That does reflect somewhat into the Pacific. As to their intentions, it is less likely that they would have anything to gain from starting a global war in the Pacific. And if they did, we would have enough mobilization and enough warning time.

Senator MACK. We may have an opportunity to pursue that later.

General, I would like to go back to Central America again for a moment and pursue some thoughts with respect to El Salvador and the capability of the FMLN. Who are they getting supplies from?

What you think the intent of their most recent defensive was? What the Salvadoran military capability is? Has it been affected by the reduction in military assistance that was voted on by the Congress?

I gave you a very broad area of questions.

General **Joulwan**. Well, first of all, I think most significantly, on Sunday we had a very free and open election in El Salvador. That I think is a very positive sign for President Cristiani and the democratically elected Government of El Salvador.

The FMLN has been involved in an offensive that took place on the day that I took command in Southern Command in November, and has gone right up to the election. There has been a short pause for the elections, but it began again today.

The insurgents do have capability. Your question was "Where are they getting support from?" In November when they shot down some El Salvadoran aircraft with SA-14s, the Salvadoran armed forces found a spent round from an SA-14. The serial number on that was traced to the Soviet Union, and given to the Soviet Union. The Soviet Union assisted us, and they tracked the SA-14 to Nicaragua.

They found it. A Soviet team went to Nicaragua and found in the inventory, that there were SA-14s missing and indeed, those SA-14s were given to the FMLN. Where the FMLN continue to get supplied from is from the Sandinistas in Nicaragua.

Just 2 weeks ago, another shipment was discovered in Honduras, earmarked for the FMLN, and, which was very troublesome, to an insurgent group in Honduras that is targeting American servicemen there. The Sandinistas are involved in supplying those systems.

The Chomorro government in Nicaragua has jailed three Sandinistas for the first one, and some FMLN supporters in Managua. And as I understand it, recently jailed a lieutenant. I think the support is still coming from the Sandinistas in Nicaragua.

As to their effectiveness, I think one of the encouraging signs of the election was that some of the fringe elements, some of the left elements did get some votes in this election. I have not seen the final results, but about 17 percent were represented at the polls. The El Salvadoran armed forces did deploy to the field, did try to protect the election.

Very interestingly, the Minister of Defense put out some very clear guidelines on how they were to behave and how they were to conduct themselves, this is the El Salvadoran armed forces, and every indication we have is that they did perform to a very high standard. So, I think we are making some progress with the El Salvadoran armed forces and how they operate within the democratic system of government.

I know that is a long answer to your question, but it is a very complicated and complex question. Again, I am optimistic that we can find, which is our policy, a negotiated settlement, and I would hope that after this election, which is the most free yet in El Salvador, that we can see a negotiated settlement come to this very tragic civil war that has been going on for over 10 years.

Senator **Levin**. Thank you, Senator Mack. Senator Thurmond.

Senator THURMOND. General Joulwan, Admiral Larson, and General RisCassi, we welcome you here. We are glad to have you.

I only have a few minutes. If you answer as briefly as you can, I would appreciate it.

Admiral Larson, your statement speaks eloquently in regard to Japan's contribution to the stability in the Pacific. As a commander of the Pacific theater, what capability would you like to see Japan acquire that it currently does not have?

Admiral LARSON. Senator Thurmond, I am very comfortable with the way the Japanese defense program is going. What I would like to see them do is complete the capability to defend their sea lines of communications out to 1,000 miles and to achieve good integration between all of their armed services so they can truly perform in a joint arena.

Senator THURMOND. Admiral Larson, Japan has pledged $9 billion in support of Operation Desert Storm. In my understanding, it is a pledge that was highly contested in the parliament and the public.

In your judgment what has been the impact on U.S./Japan relations as a result of Desert Storm?

Admiral LARSON. Senator Thurmond, I do not see a radical impact at this point in time. Our military-to-military relationships are still very strong, and we have good understanding, good communications, good cooperation.

I think what we are going to see is an internal review within the Japanese Government of the limitations of their constitutional system and the way they were able to respond to this international crisis and perhaps an evaluation of what role they desire to play in the future.

Senator THURMOND. General RisCassi, during the past several years, military construction for the armed forces in Korea has been severely constrained. What impact has this had on readiness and the morale and welfare of your forces?

General RISCASSI. Senator, the constraints in funding for military construction itself have had minimal impact on morale. We have had an adequate amount of maintenance and repair dollars to ensure that our people are living in a standard type billet.

Where the effect of no construction in Korea over the last 2 years has affected us is as we introduce new equipments or as we draw down the force. Often these steps mandate that we do some utility upgrades or pour concrete pads to house conduct of fire trainers, or that we centralize our ranges so we do not have our people on the road for an inordinate amount of time to use those training facilities.

Here the construction constraints, in fact, affect the readiness of the force because it affects the pace of training. It hampers inculcating into the force the ability to use the new end systems, because we cannot properly construct the training simulator.

So, there have been these types of effect on readiness. We have, in fact, identified particular requirements to the Department, and I expect some relief.

Senator THURMOND. General RisCassi, there has been considerable support in the Congress for the withdrawal of U.S. forces from

Korea. If such a proposal were to pass in the Congress, when, if ever, would you consider such a move feasible?

General RisCassi. As you know, by the end of Phase I we will have withdrawn 7,000 from a U.S. population of about 43,000. That was codified in the Nunn-Warner report.

We are in the process next week of identifying the goals of Phase II, which will end in calendar year 1995, and will come to grips with the question you raised. But the fundamental question is, how much is enough to ensure a forward presence in the Northwestern Pacific as an adjunct of the U.S. national security strategy?

That is the fundamental question that we as a community need to answer, so that we do not programmatically answer your question. Because if we do, we will come up with the wrong answer.

What I am suggesting to you, Senator, is that the next iteration of the Nunn-Warner report will come to grips with your question. We will attempt to identify the environment in the post-1995 timeframe and then describe for the Congress what the force structure ought to be on the peninsula.

Senator Thurmond. General Joulwan, if I correctly understand the provisions of the Panama Canal Treaty, U.S. forces must withdraw from Panama by the year 2000. Considering the instability of the region, would you advocate negotiations to establish basing rights in Panama for U.S. forces after the year 2000?

General Joulwan. I would say right now, with a year into this emerging government in Panama, now is not the time to do that. I would say what we ought to do is comply with the treaty and then try to see where we go as we build up the Panamanian security forces, and determine how effective they are going to be in defending the Canal. After a 1994 election in Panama may be the best time to address that question.

Senator Thurmond. General Joulwan, in your prepared statement, you indicate that the low level of security assistance funds preclude you from providing assistance to several countries.

Which countries that are not receiving assistance do you consider critical, and what impact has this lack of assistance had on that stability?

General Joulwan. Out of the 19 countries in the region, the 4 percent of all U.S. security assistance that we have goes to 9 of the 19. Several of those 9 get very small amounts.

One that got no assistance this year was Ecuador. That, to me, is a country that needs assistance. It is trying to set up a counter-narcotics program, and I believe it is going to need assistance to do that. That is the primary one.

Belize, for example, gets only $500,000. Guatemala gets about $2 million. All of those can use additional monies to try to help us in the struggle, particularly in the counter-narcotics area.

Senator Thurmond. Thank you, gentlemen. Thank you, Mr. Chairman.

Mr. Chairman, I have a statement that I would like be made part of the record.

Senator Levin. Thank you, Senator Thurmond. It is so ordered.

[The prepared statement of Senator Thurmond follows:]

PREPARED STATEMENT BY SENATOR STROM THURMOND

Mr. Chairman: I want to join you in welcoming our distinguished panel. This is the first time these commanders have testified before the committee on their respective commands, and I appreciate their fresh viewpoints on the critical areas of the globe they represent.

Mr. Chairman, Central and South America, the Pacific and Korea have avoided the tremendous upheaval which we have witnessed in Europe and the Middle East over the last 2 years. The changes in these regions have been subtle, but nevertheless significant.

In Central and South America, we have seen the rise of democracy in such states as Nicaragua, Chile, and Panama. There is progress against the drug runners and insurgency groups attempting to undermine legitimate governments in the region. Unfortunately, there is little progress against the most persistent enemy—the poverty and corruption that feeds both the drug runner and the guerrilla.

In Korea, the two governments have taken the initial steps toward discussing common problems and reunification. However, we must remember that the Republic of Korea and the United States still face one of the most heavily armed nations in the world. North Korea has not yet been swept up in the democratic movements which have resulted in the liberalization of regimes throughout the rest of the Communist world. It is still totally dominated by hardline Communist rulers who have no plans to slow the arms race and ease tensions in the region.

Mr. Chairman, in the Pacific region we have seen unprecedented economic growth, especially among the nations of the Pacific rim. There has been some progress in settling the strife in Cambodia. On the other hand, there is increased insurgency in the Philippines and political strife in Thailand.

Mr. Chairman, one of the tenets of the new defense presented before this committee by the Secretary of Defense is to maintain U.S. forward deployed forces. I can think of no other regions in the world where this policy would be better employed than in the regions represented by the Commanders in Chief testifying before the Armed Services today.

As the union of Europe becomes a reality and Japan expands its economic dominance, Central and South America and the Pacific region will become more critical to U.S. economic and strategic interests. Our continued presence in these regions, whether in the form of a force or through security assistance, is essential if we are to retain any influence in the regions.

Thank you, Mr. Chairman.

Senator LEVIN. Admiral Larson, where do we stand on the Philippine base negotiations in the following sense: Do we have an alternative if those negotiations are not fruitful?

Admiral LARSON. Senator Levin, we do not have an alternative that replicates everything we have in the Philippines. We would have to disperse those capabilities elsewhere in the region. The strategic location, of course, cannot be directly replicated. One of the problems is that it would be expensive, in a construction sense, to reproduce those. I think the bottom line is that we will do the best we can with this existing and future agreements. We would suffer a degradation in our forward presence if we totally lost those facilities.

Senator LEVIN. Do we have a back up plan in case we lose either or both?

Admiral LARSON. Yes, sir, we do, Senator. We do have a back up plan, and it identifies alternatives and costs. The Pacific Command has that.

Senator LEVIN. What is the current status of our military relationship with New Zealand?

Admiral LARSON. Senator Levin, we treat New Zealand in a military sense as we would a friendly nation that is not a direct ally. We have informal contacts with them, but we do not have high level military visits or exchanges, nor do we participate with them under the ANZUS Treaty anymore. We just have a relationship under that treaty with Australia.

Senator LEVIN. Do we share any information with them militarily?

Admiral LARSON. Senator Levin, we were sharing some information with them during their contribution in the Persian Gulf. I think it was a very positive sign for them to send the equipment that they sent there. But we do not share classified material or technology with them on a day to day basis.

Senator LEVIN. Would you like to see that relationship restored, that treaty relationship?

Admiral LARSON. Well, Senator Levin, I certainly would, and I would hope that the new government under Prime Minister Bolger will be able to continue to move toward a reconciliation with the United States. I would hope there is a resolution to the nuclear legislation, the prohibitive nuclear legislation, because they are a long-term ally and friend, and we have a lot of common bonds. We certainly would be willing to welcome them back into the treaty partnership.

Senator LEVIN. Are you familiar with the details of that dispute?

Admiral LARSON. Yes, sir.

Senator LEVIN. I am going to send you some ideas that I have had over the years about how to resolve it because it is a good relationship, and it is sad that it has been strained over the last few years because of that problem.

Other countries have had similar provisions in their constitutions, and we have been able to work around those provisions to maintain good relationships with other countries. We ought to be able to do the same with New Zealand.

They have been a tremendous ally over the years, and I am going to send to you some ideas that I have had.

Admiral LARSON. Senator, I would be pleased to receive those, thank you.

Senator LEVIN. Thank you. Going back to the Korean cost, the burdensharing issue, just for 1 minute.

Last year, Admiral Hardisty said that South Korea can do more and should do more. Those are his words. They have been slow to reach agreement with the United States on specific burdensharing improvements. He said that there is a need for complete understanding on such issues as labor cost sharing.

General RisCassi, you said that the formula for determining future increases in labor cost sharing is still being determined. You said that in your written statement. In your oral testimony, you talk more about COLAs and maintaining the level that is currently in place, and did not, I do not believe, comment on future increases in the labor cost sharing formula.

What is the status of that?

General RISCASSI. Of the 1991 dollars that have been identified under the cost sharing or burdensharing agreement, $43 million is in the labor cost sharing arena, and $20 million of that has been approved already by the National Assembly with a due out for the rest. Currently we are waiting for supplemental legislation for the remaining amount.

I do not, at this time, anticipate any problems achieving the total $43 million.

Senator LEVIN. Are we in agreement with the Korean Government on that formula?

General RISCASSI. Yes, sir.

Senator LEVIN. There is an agreement now?

General RISCASSI. I am not quite sure what you mean by an agreement. We have had the Ambassador for Burdensharing in country several times on my watch. The Embassy has been involved in the negotiations, and the numbers that we provide are direct fall-outs from those deliberations. So, I am going to tell you, yes, sir for 1991. The 1992 and future years are being worked out. If you ask me to produce a paper, I will have to go back and generate it.

Senator LEVIN. I was just referring to this statement. The Defense Department reported in November that, "Although the Republic of Korea has made some improvements in its approach to cost sharing, the U.S. Government remains concerned about the need to complete understandings on such issues as labor cost sharing." That is the quote I was referring to.

General RISCASSI. Yes, and I think that in November, that was a true statement, and I think we have closed down on that issue satisfactorily at this juncture.

Senator LEVIN. Would you let us know for the record on that issue?

General RISCASSI. Absolutely.

[The information follows:]

Until January 25, 1991, there was no legal basis for the Republic of Korea to provide labor cost sharing contributions. On that date, a Memorandum of Agreement was signed between the United States and the ROK which specifically provided ". . . the ROK Government will bear a portion of the expenditures for the employment of Korean national employees of the U.S. Armed Forces in Korea. . ." This agreement, which is in force until December 31, 1993, also provides that the Government of the Republic of Korea will determine the amount of contributions to labor cost sharing on an annual basis. A specific funding level for 1991, $43 million, was agreed to at the 22d Security Consultative Meeting between the Secretary of Defense and the Korean Minister of National Defense. Negotiations are on-going to obtain an out-year solution for ROK Government funding of U.S. labor costs. These negotiations are specifically aimed at gaining compatibility of two uniquely different systems. The ROK National Assembly provides funding to government agencies on an annual basis, and does not currently authorize multi-year funds. Additionally, the Korean budget cycle is based upon the calendar year, rather than the fiscal year system present in the United States.

USFK, however, possesses no legal vehicle to receive ROK Government labor cost sharing monies to pay for Korean nationals employed by the command. While Congress requires host nations to share a greater portion of foreign labor costs, explicit statutory authority for DOD to accept host nation contributions in funds and apply them directly to foreign labor costs has not yet been provided. As a result, any labor funds provided by the ROK Government today will go directly into the General Fund or the Defense Cooperative Fund. USFK is currently seeking timely legislative relief, through DOD channels, to resolve this problem.

Senator LEVIN. What is the status of that famous golf course that I never played golf on?

General RISCASSI. Senator, we could have gone the entire afternoon without answering that. [Laughter.]

Senator LEVIN. I did not want to leave you with a gap in your testimony. [Laughter.]

Senator LEVIN. You knew I was going to ask about that.

General **RisCassi**. Yes, sir, I did. The new facility that was part of the process of turning over the current Yongsan golf facility is about 93 percent to 95 percent completed, with the total completion date due on or about the 1st of June 1991. This step is important because it triggers the hand-off of the Yongsan golf facility to the Minister of Defense, who later hands it to the Mayor of Seoul. The transmittal will take place, in terms of us getting a new golf facility, on June 1, 1991.

The Ministry of Defense then has 18 months in which to construct a security fence, relocate our helipad, because it supports the hospital, and ensure that we have an adequate sewage treatment facility. That means hooking up our facilities to the city of Seoul sewage lines.

All of that can be achieved inside the 18-month window, so I would report to you that everything is on track.

Senator **Levin**. Is there going to be some kind of very visible ceremony when that hand-off takes place in June?

General **RisCassi**. There will be a visible ceremony for both closing the Yongsan golf facility and opening up of the new golf course. Quite frankly, I think we have brochured the golf course way beyond its true value in the negotiation process of relocating out of Yongsan.

Although it was the initial trigger event, I think it received an inordinate amount of press, way beyond its significance in jump starting the system, if you will. But the short answer to your question is we will have a closing and opening ceremony with the new facilities.

Senator **Levin**. It became an important symbol. What sometimes happens is these symbols get blown way out of proportion, but it did become an important symbol. That transfer, it seems to me, has an important symbolic significance in terms of the public in South Korea.

I am just curious as to whether or not that transfer is going to be as visible as some of agony that was expended in the media over it when we used it as a golf course.

General **RisCassi**. The opening of the new golf course facility is a symbol, but not in the sense that you are talking about. The true symbol will be when they construct the new fence, the security fence, when they build the new helipad, and when they hook up the sewage treatment facility. At that juncture, the existing golf course is turned over to the city.

Senator **Levin**. We do not transfer the old one to them until those changes are made?

General **RisCassi**. That is correct.

Senator **Levin**. Is the golf course not used during that interim?

General **RisCassi**. The golf course is not used as a golfing facility during that period of time.

Senator **Levin**. Senator Warner is on his way over. He wanted to greet you, and I think he has some questions as well. I am done with my questions.

Let's recess for 3 minutes. [Recess.]

Senator **Warner**. Mr. Chairman, I thank you.

Senator **Levin**. We will come back to order. Our ranking member, Senator Warner, has been able to get back from the floor where he has been helping to manage the bill, the defense bill, as we explained earlier.

We not only will call upon him, but we will turn the gavel over to him. We do that always with great pleasure.

Senator **Warner** [presiding]. Thank you, Mr. Chairman. I appreciate the trust and confidence that the majority would repose in the minority, and I will not abuse it. [Laughter.]

This committee has had a long history, and much of the tradition was established by some of the foremost members that have ever served the U.S. Senate, and I am proud of the bipartisanship that we have on this committee. I think it works for the benefit of a stronger national defense, and most particularly, for the men and women of the Armed Forces.

It is that subject that we have been engaged in, a rather active debate, Senator Nunn, the Chairman, and myself, on the floor. I extend my apologies for not being with you.

I must say that I am certain that you share in the pride that this Nation is now according the men and women in the Armed Forces. Each of you has devoted, I would presume, better than a quarter of a century of your life in uniform, and I hope that you, in a modest way, accept some of the profound respect that this Nation, at long last, is giving those who wear the uniform of our country.

I also feel that this committee, under the leadership of Chairman Nunn, during the course of the Goldwater-Nichols Act gave very special recognition to the offices that each of you now hold.

I also feel very strongly, having gone to the Gulf on two occasions, and I am about the embark tomorrow on the third, to visit with our military from General Schwarzkopf down to Lance Corporal, that the Goldwater-Nichols concept of reposing greater discretion and authority in the CINCs was one that our President and Secretary of Defense and Chairman very wisely adopted in the laying of the plans and then most significantly, the execution of those plans in this military operation.

I am proud to say, with some immodesty, that 2 months ago, I gave a speech, I do not think anybody listened, but it is recorded, that following a meeting with the President, I gained the distinct impression that he was going to give the military leaders of our country the widest latitude of discretion in the executing of his orders as Commander in Chief since, perhaps, World War II, and that would likely be a very important aspect of the conduct of this military operation.

Well, now in hindsight, I would say that decision by the President, the Secretary, and the Chairman, I think, directly contributed to the success of this military operation. You have been trained throughout your lives to operate and conduct a military operation following the guidance of the President, and you did it, and you did it well.

Individually, while you all were not in the direct line in many respects, you deserve a lot of credit.

There are one or two questions that I would have. First to you, General Joulwan. What can you tell us about the latest status of the murder of the Jesuit priests in El Salvador? Senator Nunn and I made a trip to that area, and we are quite interested in that question.

General JOULWAN. Senator, we all deplore what occurred on that date in November 1989 when six Jesuit priests, the housekeeper, and her daughter were murdered. Since I have taken command of the Southern Command, it has been one of my objectives to try to get some resolution to this case.

I might report that recently the Minister of Defense, General Ponce, has agreed to testify in person before the judge, and he has also directed total compliance by every other person in the military who was involved at the University, at the Military Academy that night.

So, it is a significant step forward, I think, Senator, that the El Salvadoran armed forces now are cooperating with the judge, and this will hopefully lead to justice being done in the case.

Senator WARNER. It was Senator Dodd who finished that leg of the trip with me. Senator Nunn and I had gone to Panama, then I continued on to El Salvador with Senator Dodd. But I know Senator Nunn has an interest in this because we are likely to address the issue in continuing support. This is a pivotal set of facts on that issue.

General JOULWAN. If I might add, Senator, on Sunday there was an open and free election in El Salvador; that all political persuasions were represented; that the El Salvadoran armed forces were in the field, particularly to protect the polling places. But again, the Minister of Defense put out very clear guidance to them about their conduct and every report by every bipartisan group that was down there was that they conducted themselves in a very, very good manner.

So, I think we are making progress. I think what I said in my statement about our military standing for more than just providing equipment or training—that we stand for ideas, ideals, and values—is being imparted to the El Salvadoran armed forces.

Senator WARNER. Thank you, General, because you give a special insight into this situation.

General, if I may continue with a second question. We have passed legislation over the past several years to permit increased use of U.S. military assets in the never-ending battle against narcotics and the trafficking of narcotics.

Are these measures, in your professional judgment, effective? Do we, the United States, need additional legislation in this area? What about the level of resources you have to assist in this?

General JOULWAN. Right now, Senator, I think they are effective. We are seeing some payoff in the training, for example, particularly in the Andean Ridge Strategy. We are seeing Bolivian police that have been trained by us performing in an extraordinary way. Even in Colombia which is being hit with a very fierce insurgency right now, they are developing a very effective counter-narcotics program.

I might add that last year alone, 60 metric tons of cocaine were seized in Bolivia, Peru, and Colombia, the majority being in Colombia. That equates to street value of $13 billion, and more importantly, 500 million hits of cocaine were taken off the street, so, in some respects, we are being very effective.

We are now concerned as we develop more information about narcotraffickers who are very well funded and who have a very elaborate system, that we see the trafficking spreading over transit routes spreading through Central America, and we are trying to work with the Central American governments and our Ambassadors there to try to develop a Central American strategy as well.

It is an insidious sort of operation, but we are coming to grips with it, and all the agencies involved within our government are working to solve that problem.

Senator **Warner**. Well, that is an encouraging report. I think once we are able to focus more of our time and attention on the series of problems that are facing this country, more attention will be paid to this.

The Gulf situation has been quite dramatic, and hopefully, it is going to conclude it is in our best interests, and we will be able to give more attention to that. But that is a good report.

For General RisCassi, during the past year, we have witnessed a record number of meetings between officials of North Korea and the Republic of Korea, including the first meeting at the Prime Ministerial level.

What is your view as to the prospects for some improvement, and that is, credible improvement in the relations on the Korean peninsula in the foreseeable future?

General **RisCassi**. As you know, during this past 6 or 7 months, we have witnessed three ministerial meetings. An unfortunate aspect was that there was no joint communique that was issued at the conclusion of any of the meetings and the fourth round was summarily terminated by the North because of the exercise Team Spirit.

But it is progress. The North and South have turned the page in a new book in that they have not met at that level in the past. There is a degree of hope just in the fact that they met three times in a very short timeframe.

So, I think the best answer to your question, Senator, is that there is a manifestation of hope, and if you ask the South, that hope will eventually lead to more substantive talks that eventually will lead to unification. The President of the Republic is on record saying that as we close out this decade, he thinks unification is achievable.

Senator **Warner**. Did the Gulf situation have any impact on the relative fragility of those relationships?

General **RisCassi**. I think it had an effect on the North, a startling effect.

Senator **Warner**. Sobering effect?

General **RisCassi**. Yes a very sobering effect. The ability of the U.S. forces to get there with a preponderance of combat power and the sustainability to support that force; then, the ability to create a multinational force that represented a significant value on the ground and won quickly, none of this was minimized in Kim Il Sung's eyes.

From the South's perspective, it showed the willingness of the United States to quickly come to the aid of a threatened ally.

Senator **Warner**. To put it in the vernacular, my country, the place where I live, our word is our bond. When we make a commitment in the United States, we keep our word. That is just simple language. They understand that.

General RisCassi. Yes, sir.

Senator Warner. Admiral Larson, when I was around the E-ring, your job was considered the best job. How did you get it? [Laughter.]

Admiral Larson. Mr. Chairman, I am not sure, but I have had two consecutive best jobs, the Pacific Fleet and now the Pacific Command, and I am very grateful.

Senator Warner. I had a lot of personal enjoyment visiting with your predecessors, foremost among them Admiral McCain. On my frequent trips to Vietnam, I would always stop off there, and he was a great figure in the history of this country, and much of his tradition is being carried on by his son, whom I am sure you know, and probably just nearly a running mate; is he not?

Admiral Larson. Senator, Senator McCain was a Naval Academy classmate. We were best friends at the Naval Academy. We lived together for 2 years as bachelors going through flight training together. He took my nomination to four stars to the floor, and took me up to the gallery to watch, and I told him they never would have believed 32 years ago that you would be a Senator taking my four star nomination to the floor, and Senator McCain was kind enough to say that they would have believed you but not me. [Laughter.]

Senator Warner. And I will bet that if you had put one other question, do you want to trade jobs, he would have done it. [Laughter.]

During the last year, Admiral Larson, a number of meetings have been held between officials of the Soviet Union and Japan in an attempt to improve relations between those two nations. It is my understanding that President Gorbachev plans to visit Japan within the year.

What is your professional judgment as to the prospects for some improvement in the Soviet/Japanese relations and the prospects of including a resolution of the dispute over the Northern Japanese islands?

Admiral Larson. Well, Mr. Chairman, of course the Northern Territories, or the Northern Islands, they are a key pivotal element in any improvement between the Soviet Union and the Japanese.

It is hard to predict what positions the Soviet Union will take. I am cautiously optimistic that they will improve their communications, but I do not look to a dramatic change in their relationship until that situation is resolved. I do not think that will be easy to resolve on the Soviet side.

They have surprised me in the past over the last couple of years, but I think that will be a key issue.

Senator Warner. That's interesting. It seems to me that is a logical solution. I do not know what value they are, certainly not of strategic value to the Soviet Union. Are they of any value? Maybe a listening post or something?

Admiral Larson. They do have some defense installations on some islands. I think under the old global war scenario, they were certainly strategically located. Those islands could give us a problem.

Senator Warner. As a backbone of the PT-boats, was a threat?

Admiral LARSON. Well, more the air threat that could be posed from those islands.

Senator WARNER. General RisCassi, on the floor right now is some debate with respect to tactical ballistic missiles. The North Koreans have been among those countries who have provided tactical ballistic missiles, and such TV and technology as they possessed to other renegade nations. How can we cope with this situation? What can we do? What leverage can we apply? It seems to me that either the world community goes full bent on developing both offensive and defensive systems in this area, but we sit down and try and resolve among ourselves some type of international understanding about the proliferation.

General RISCASSI. That is difficult to come to grips with. One avenue may be to attempt to attach it to the process as the Japanese normalize relationships with the North. One of the quids may be as an economic trade-off, to put some constraints on the North in the development and the proliferation of these systems.

As you know, we have talks going in Beijing at an informal level, and that subject may be entertained at those talks. But clearly, it represents a significant threat in terms of a terrorist weapons system as it was used in Southwest Asia. The ability to use missile systems to hold an inordinately large number of people hostage is, although not militarily significant, it is significant politically. In that sense, it plays into the military scheme of how one would defend the peninsula of South Korea.

It represents a threat on the peninsula, and it represents a threat in the market place if you will as a significant system could be sold internationally. We need to truncate the North's ability to sell to various regimes.

Senator WARNER. What is the extent of your present defense infrastructure against those missiles now within your command?

General RISCASSI. Without getting classified on that subject, Senator, poor.

Senator WARNER. Poor. P-o-o-r. Then I would just opine, having studied the Gulf operation, that the concealment of their systems in terms of the number of buildings, the terrain, and other geographical things poses a far more difficult, or should we say, the air component of attacking the source than was experienced in the Gulf region, would you say?

General RISCASSI. It is a much more difficult target, and it is also more difficult from a technological standpoint. The proximities will force you into a regime of depressed trajectory weapons systems which present another dimensional problem. The acuity of our radar systems, unless we proliferate the current standard Army system, are incapable of handling this threat.

So it is rather significant.

Senator WARNER. Thank you, gentlemen. I appreciate your patience, and Admiral Larson, if you would carry back a message to Admirals Clarey and Hayward in that order.

Admiral LARSON. I would be happy to.

Senator WARNER. Clarey was Vice Chief when I was privileged in the Secretariat. I doubt I would be in the Senate today if he had not grabbed me by the collar a dozen times and pulled me back from the abyss of destruction, destruction of myself.

I had the good fortune of having Admiral Hayward, then, as an aide. Both of those men were able to overcome the detriment to their career through the association with me, and I am everlastingly grateful. Thank you.

Admiral LARSON. Senator Warner, I would be glad to.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JOHN GLENN

INTELLIGENCE SUPPORT

Senator GLENN. Secretary Cheney recently told this committee that one of the implications for future regional conflicts is the importance of being able to focus intelligence efforts more on specific regional threats in the post-Cold War world. General RisCassi, I note that in your testimony you state the need for improvements in airborne and ground intelligence assets of several types, as well as processing and dissemination systems. As a member of the Senate Intelligence Committee, as well as this committee, I would appreciate hearing from each of you on the adequacy of your tactical and strategic intelligence support in your region and what specifically you would like to see improved.

General JOULWAN. Despite the loss of key collection assets during Desert Storm, we have maximized the use of available assets and are accomplishing our mission. However, our operations will be greatly enhanced and more fruitful when three important programs, which support the counter-narcotics effort, are fully operational: The Command and Management System (CMS), Airborne Recce-Low, and the Caribbean Radar Network (CBRN). Some specific shortfalls are in the following areas:

Strategic Intelligence. [Deleted.]

Tactical Intelligence. Tactical intelligence support [deleted].

HUMINT. Human sources of intelligence are more of a premium in Low Intensity Conflict and Counter-narcotics operations than in a conventional warfare environment. All the sophisticated airborne/ground assets collecting IMINT and SIGINT are most useful when confirmed and supplemented by reliable HUMINT sources. [Deleted.]

Admiral LARSON. Recent dramatic changes in U.S.-Soviet relations and other geographic-political realities make preparing for contingencies and regional crises a top priority. During peacetime, our mix of theater and national use has met our minimal requirement in collecting information. Crisis, regional conflict, and war will exacerbate our theater collection system's limited capability.

From an imagery standpoint, the primary imagery dissemination system has worked efficiently during this past year while we continue to work improvements in our secondary dissemination system. Also our exploitation and reporting effort has been highly efficient. [Deleted.]

We are working diligently at ensuring interoperability of our secondary imagery dissemination systems and reducing time lines in transition of the imagery from primary to secondary systems.

During Desert Storm, a USPACOM component imagery support center provided direct imagery product support to COMUSNVCENT and COMUSMARCENT. To accomplish its mission, however, it was necessary to augment the center with additional personnel from other theater resources. [Deleted.]

We are presently merging three of our intelligence centers to form one theater level organization which will support operational commanders' requirements. However, with this merge we will also undergo a 25 percent reduction in our intelligence personnel in the next several years. [Deleted.]

[Deleted.] These shortfalls will expand as the Soviet target diminishes in Europe. [Deleted.]

We must improve our ability to provide timely intelligence directly to tactical commanders. Systems such as Tactical Receive Elements (TRE) with applicable workstations, Tactical Intelligence Broadcast System (TIBS) and Commanders Tactical Terminals (CITS) are all going in the right direction. However, we must field sufficient numbers of these systems so we can work with them daily and fully integrate them into our operations. We must also develop the capability to provide direct analytical support from the theater intelligence center to deployed forces. However, the number of satellite communication channels available for this purpose are limited and must be increased.

Threats to U.S. interests in the Pacific come from many directions. They include large scale regional conflict on the Korean Peninsula or between India and Pakistan, local insurrection and territorial disputes exemplified by the Philippine situation and border conflicts between Thailand and Burma, regional and international terrorism, technology transfer and weapons proliferation, and countering the flow of illegal drugs—a high peacetime priority in the Pacific theater.

We will continue to focus HUMINT on the above threats. As you know, HUMINT is a key weapon which supports our contingency plans in these low-to-mid intensity conflict arenas. It provides us information on enemy intentions, actionable intelligence, and the decision making of senior political and military leaders.

[Deleted.]

The bottom line is that we must surge to meet the regional crisis. We will need the resources to enable us to task, collect, process, exploit and disseminate information rapidly and accurately.

Our peacetime capability meets our minimal needs in an austere environment. However, with crisis, regional conflict or war, we will need more resources to complete the mission.

General RisCassi. Theater and national assets meet the minimum needs of the CINC and field commanders during armistice maintenance. Ground and air collection assets are currently adequate and, when supplemented by U.S. national collection, provide a combined picture suitable for indications and warning. Aging collection systems, limited processing and uncertain communications, coupled with manpower reductions in key intelligence specialties, will over time, threaten armistice support.

Theater ability to surge for crises or war is deficient. During crises, collection will outstrip processing. An improved architecture which provides increased analytical support, data processing and both raw and fused intelligence dissemination is required. More ROK involvement in analysis and better processing and dissemination systems is required. Improved Korean Intelligence Support System (KISS), Theater Automated Command Control Information Management System (TACCIMS), and Secondary Imagery Dissemination Systems (SIDS) are a first step in that direction.

Wartime exacerbates the above deficiencies and adds new pressures on collection and dissemination. The current ground SIGINT collection capability is heavily dependent on fixed and vulnerable sites and the entire intelligence architecture (from collection to processing and dissemination) is hostage to a highly vulnerable and inefficient terrestrial communications system.

A surge collection capability is an absolute requirement. JSTARS is clearly a capability vital to the theater's ability to view and target the enemy's exploitation and follow-on forces. This is particularly true in Korea, where the theater SLAR capability will disappear in 1997. An all weather, day-night view of the battlefield/crisis area which will reach the tactical and/or theater commander in near-real-time is essential. Additional U2/TR1s, with improved (IR capable) Electro-Optical (EO) and Advanced Synthetic Aperture Radar System (ASARS), with Enhanced Moving Target Indicator (EMTI), Comfy Levi augmentation and improved Army IEW systems such as GUARDRAIL with full up Common Sensor are also vital. Much of this technology was proven in Desert Storm.

Processing and analytical capability must be augmented as soon as possible during crisis or war. Dissemination remains a problem unless tactical receive capabilities like Tactical Commanders Terminals (TCT), Tactical High Mobility Terminals (THMTs), Enhanced Tactical Users Terminals (ETUTs), etc. are available to field commanders. These dissemination capabilities are most necessary during wartime, but their support to crisis or armistice operations is also vital. More importantly, we must train with these systems during armistice if we are to adept at employing them during wartime.

Throughout the armistice to wartime continuum, ROK capabilities must enhance, support and work with U.S. systems. The United States must be prepared to share intelligence and system information to the maximum extent possible. The ROK must be encouraged to allocate energy and scarce resources where they can best be used, working from the tactical level to the theater-strategic as their intelligence modernization program matures.

COMBAT REQUIREMENTS

Senator Glenn. The Goldwater-Nichols Act states that Combatant Commanders will advise and make recommendations to the Secretary of Defense, through the Chairman, with respect to the operational requirements of their commands. Will each of you tell the committee what your top priority operational requirements for the fiscal years 1992–1993 are, and to what extent these requirements are included in this year's budget submission.

General Joulwan. My top priorities among my assigned missions are:

(1) Stopping the flow of drugs emanating from the region;

(2) Supporting a negotiated settlement of the insurgency in El Salvador;

(3) Helping to develop security and democracy in Panama;

(4) Enhancing professional militaries in the region, so they support, rather than threaten democratic institutions;

(5) Promote Human Rights.

Several key operational requirements support mission accomplishment. Critical programs in the counter-narcotics effort include, but are not limited to the Command and Management System (CMS), Airborne Recce-Low, and the Caribbean Radar Network (CBRN). These three, and the many less visible programs (e.g. Tactical Analysis Teams, Communications Improvements, etc.) are funded at minimal levels consistent with my mission requirements in fiscal years 1992 and 1993.

Solution to the El Salvador situation may require our continued military assistance, to assure the government remains sufficiently strong militarily to continue to prevent insurgent military victory and to continue to foster democratic institutions.

Development of security and democracy in Panama is very much in our national interest. Programs of concern to this committee are minimal, and are sufficiently funded. I request your broader support as Members of the Senate for all programs to further development in this area.

Admiral **Larson**. During development of the fiscal years 1992-1997 defense program, which culminated with the fiscal years 1992-1993 budget, USCINCPAC's top priority operational requirements were identified as antisubmarine warfare, strategic lift, indications and warning, readiness and sustainability, and force projection. The impact of evolving strategic readiness and budget constraints has been reduced funding and some cancellations in programs that address these requirements. Reductions: SSN-21 *Seawolf*, MK-50 torpedo, C-17, KC-10 modification, over the horizon radars, unmanned aerial vehicles, DDG-51 Aegis cruiser, amphibious ships, Advanced Tactical Fighter. Cancellations: A-12 Advanced Tactical Aircraft, P-7 antisubmarine aircraft, V-22 Osprey. We are currently reassessing our requirements and priorities for fiscal years 1994-1999 planning in view of changing strategic realities and our Persian Gulf experience. This effort will be completed this fall. We expect our top priorities to be programs that contribute to readiness (particularly joint/combined exercises), force projection and contingency response, and sea control.

General **RisCassi**. Specific operational requirements have been prioritized and submitted to USCINCPAC as part of the Pacific Theater Requirements System Master Requirements List, a classified document. Priority operational requirements from this command for fiscal years 1992-1993 include Command, Control and Communications; intelligence, readiness and sustainability; and mobility. In the Command, Control and Communications area, the Army-supported family of simulation initiatives will lessen the dependency on large scale field exercises. In the intelligence arena, continued U.S. strategic and operational assets are vital not only to any warfighting effort but to provide early warning of any North Korean attack. We have requested improvements in airborne and ground intelligence collection assets of several types, as well as processing and dissemination systems.

The most serious operational deficiency remains in the area of sustainability. There is a particular need in Korea for an expanded stock of modern munitions capable of defeating enemy armor and artillery in hardened facilities. Additionally, there are shortages in Korea of preferred munitions and counterair munitions which will be essential in the opening days of a conflict. Prepositioned War Reserve Stocks also remain a high priority. Inadequate stocks of major end items, decreases readiness posture. Finally, USFK echoes the Chairman and the Secretary of Defense in their priority for expanded strategic lift. Both the C-17 and fast sealift programs are badly needed to correct existing deficiencies.

The resources proposed for this command in 1992 and 1993 authorization bills will sustain in the accomplishment of the military objectives in this theater.

Questions Submitted by Senator Trent Lott

COUNTER-NARCOTICS FUNDING

Senator **Lott**. General Joulwan, the operations and support funding for DOD counter-narcotics activities is funneled through a summary account and then out to individual services and area Commander in Chiefs (CINCs). This is a convenient way to display the totals for the Department and is not intended to restrict the flow of monies.

Are you getting the funds requested and appropriated in a timely manner?

Is the accounting convenience causing any problems that you are aware of?

General **Joulwan**. The summary account does provide a sensible vehicle for managing counter-narcotics funds. It is particularly useful to the offices which must rank the many competing projects, which invariably will exceed in requirements the available resources.

Earmarking resources has complicated the ranking of projects, however, and caused a delay in the release of funds while subsequent reexamination of project priorities are made.

Release is anticipated shortly, and I anticipate successful execution of those projects which remain funded when all final adjustments have been made.

HUMANITARIAN AND CIVIC ASSISTANCE ACTIVITIES

Senator **Lott**. General Joulwan, in your statement you refer to the objectives and priorities of SOUTHCOM.

In a letter from DOD (dated March 8, 1991), SOUTHCOM is credited with humanitarian and civic assistance activities in nine countries and with expending $2.3 million.

How important are these activities in support of your command's objectives and priorities?

General **Joulwan**. I consider nation assistance in general and humanitarian and civic assistance (HCA) activities specifically to be essential and growing ingredients in the execution of my responsibilities in the Southern Theater. I am working closely with LTG Hatch (USA Corps of Engineers) and MG Ward (USA Reserves) to employ their resources more effectively. We are also exploring several proposals for enhancing DOD's legislative authority to support HCA efforts.

While much of our attention has been directed at the immediate threats in the theater, our strategy also calls for addressing the underlying socio-economic conditions from which these threats emanate. This is where HCA activities fit, and they are integral to our strategy.

Nation Assistance, an integral part of our regional activities, gives Host Nation populations added reason for supporting our counter-narcotics and crop eradication programs. This builds a stronger partnership with Host Nation agencies and military.

Senator **Lott**. Admiral Larson, the Pacific area of responsibility is vast, and the mixture of peoples and cultures is very diverse. In a letter from DOD (dated March 8, 1991), PACOM is credited with humanitarian and civic assistance activities in 13 countries and with expending $1.1 million. Are these activities and funds important in meeting your responsibilities in the Pacific? Is the funding level adequate for your needs?

Admiral **Larson**. Humanitarian and Civic Assistance (H/CA) activities are very important for meeting our responsibilities in the Pacific. The assistance we render leaves a lasting impression of cooperation. It has a multiplying effect in building our mutual relations, leading to the establishment of important bilateral agreements or concessions. We're convinced that we get tremendous returns for relatively small dollar investment of our H/CA funds. Adequate funding is a less certain issue. We received $2.42 million for the total fiscal year 1991 Unified Commanders' Conduct of Cooperative Programs with Friendly Nations, referred to as Title 10. H/CA—one of three Title 10 elements—is funded at $869,250, $600,000 less than our programs demanded this year. (The other two elements of the overall Title 10 program are Combined Exercises and Regional Cooperative Seminars and Conferences). However, accurate projections for future years need to weigh increased demands expected from the perspective of the "new world order" against force structure drawdowns. Our Active and Reserve components must continue to project themselves throughout the theater. The H/CA funds we receive only pay for the direct materials consumed in rendering the actual assistance. The Active and Reserve components must have sufficient Operations and Maintenance (O&M) Funds to conduct the valuable exercises that ultimately use these materials. I can report that our H/CA expenditures have increased almost eight-fold from the $135,000 first spent in fiscal year 1987 to the $1.1 million worth of expenditures noted for fiscal year 1990 and the influence and access we have gained throughout the Pacific as a result has shown the same positive progress.

GUIDELINES FOR JOINT/MULTI-NATIONAL ACTIVITIES

Senator **Lott**. Admiral Larson, you are tasked to organize, to train, to meet, to confer, and other activities with countries over a vast distance of miles and overlapping treaty and defense arrangements. Getting them together and funding the meetings is quite a challenge. During the review of the fiscal year 1992 DOD budget request, the legislation, guidelines, and funding for these activities will be reviewed for extension. If you have any recommendations for changes or any items which inhibit you, would you please provide today, or for the record, any recommended changes?

Admiral LARSON. It is imperative that the authority to subsidize developing countries' participation at cooperative meetings be continued. Subordinate to the need for continuance, two recommended changes can be offered. First, because political and military interests often transcend AOR boundaries, it would be extremely beneficial if developing countries of mutual interest to more than one unified command could attend meetings in other regions. For example, Pacific rim, South American countries or Eastern African nations are frequently interested in attending USPACOM seminars or conferences, but under current rules USPACOM cannot encourage attendance with financial support. Second, in instances where a country is not assigned to any CINC's AOR, the option to sponsor their travel to USPACOM meetings would be beneficial. Mexico is of particular interest.

SUSTAINABILITY CONCERNS FOR KOREA AREA

Senator LOTT. General RisCassi, in your statement for the record, under the section on Operational Priorities, and readiness and sustainability, you point out that the most serious operational deficiency remains in the area of sustainability. By distinguishing between readiness and sustainability, I wish to ask a specific question. Because of the threat scenario and the length of the supply route, reacting to your needs may not be timely. Do you consider your stocks adequate to meet the immediate readiness needs, but you cannot sustain; or are the shortages so deep that your readiness posture is also affected?

General RISCASSI. Forward deployed forces suffered some degradation of readiness due to priority shipment of spares to support Operation Desert Shield/Storm. Since the successful conclusion of the war, readiness has improved and will continue to do so. I anticipate readiness stock to be quickly back to pre-Desert Storm levels and adequate to our readiness needs. The thrust of my statement dealt with reinforcements until routine resupply is established, the fill against those authorizations is less than desired . . . especially for modern munitions, reserve weapons systems, repair and spare parts, and medical items. War reserve shortages, coupled with the distances between U.S. depots and the Korean peninsula, demand early and significant amounts of scarce lift assets be devoted to sustainment rather than reinforcement.

RETURN/RESUPPLY OF ITEMS SENT TO PERSIAN GULF

Senator LOTT. General RisCassi, to meet the ammunition, spare parts, and support needs of the Persian Gulf, the area CINCs contributed from their reserves. Have plans been made to ensure your command will eventually be restored with adequate quantities of these items to meet command taskings?

General RISCASSI. The command did, of course, provide stocks to support Operation Desert Storm . . . valued at over $350 million. The services are aware of what we provided and will fill our shortages based on worldwide priorities and availability of stocks . . . both in depots and the Kuwait Theater. Some of the stocks we provide to support Desert Storm have already been turned around and are enroute back to Korea. In addition, the ROKG has proposed $50 million worth of replacement stock for USFK as part of their Gulf contribution.

[Whereupon, at 4:15 p.m., the hearing was adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEARS 1992 AND 1993

TUESDAY, MARCH 19, 1991

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

FISCAL YEARS 1992 AND 1993 DEFENSE AUTHORIZATION REQUEST AND THE FISCAL YEARS 1992-1997 FUTURE YEAR DEFENSE PLAN

The committee met, pursuant to notice, at 2:02 p.m., Senator Sam Nunn (chairman) presiding.

Committee members present: Senators Nunn, Exon, Levin, Bingaman, Dixon, Glenn, Shelby, Warner, Thurmond, Cohen, McCain, Wallop, Lott, Coats, Mack, and Smith.

Committee staff members present: Arnold L. Punaro, staff director; Andrew S. Effron, general counsel; Marie Fabrizio Dickinson, assistant chief clerk; Richard D. DeBobes, counsel; and Madelyn R. Creedon, counsel.

Professional staff members present: Robert E. Bayer, Robert G. Bell, Creighton Greene, John J. Hamre, William F. Hoehn, Jr., David S. Lyles, Michael J. McCord, and Frederick F.Y. Pang.

Minority staff members present: Patrick A. Tucker, minority staff director and counsel; Romie L. Brownlee, deputy staff director for the minority; Brian D. Dailey, Ronald P. Kelly, George W. Lauffer, John E. Mansfield, Durwood W. Ringo, Jr., and Mark B. Robinson, professional staff members.

Staff assistants present: Barbara Gallo, Elizabeth Ann Harlow, Mary J. Kampo, Lisa H. Kettlewell, Cindy Pearson, Debra A. Rice, and Mickie Jan Wise.

Committee members' assistants present: Andrew W. Johnson, assistant to Senator Exon; Kenneth N. Luongo, assistant to Senator Levin; Charles C. Smith, assistant to Senator Dixon; Milton D. Beach, assistant to Senator Glenn; Leon S. Fuerth, assistant to Senator Gore; Terence M. Lynch, assistant to Senator Shelby; Dale F. Gerry and Christopher K. Mellon, assistants to Senator Cohen; Marshall A. Salter, assistant to Senator McCain; Samuel D. Adcock, assistant to Senator Lott; Eric H. Thoemmes, assistant to Senator Coats; Ross Lindholm, assistant to Senator Mack; and Thomas L. Lankford, assistant to Senator Smith.

OPENING STATEMENT OF SENATOR SAM NUNN, CHAIRMAN

Chairman Nunn. The committee will come to order. The committee meets this afternoon to continue our hearings on the defense budget request for fiscal years 1992 and 1993 and on the Future Year Defense Plan.

For members' information, the committee is going to be extremely busy this week, with several key hearings, as well as being involved in a conference with the House on the Persian Gulf bill, as well as the floor action. So we are going to be spread very thin this week. We also need to act on a number of time-sensitive military nominations, as well as the Base Closure Commission nominees.

Thus far, our committee has heard testimony from the Secretary of Defense and the Chairman of the Joint Chiefs of Staff on the new military strategy and the budget request, from the Director of the Central Intelligence Agency and the Director of the Defense Intelligence Agency on the global threat, from outside witnesses on trends and developments in the Soviet Union and Eastern Europe, and from most of our combatant commanders.

This afternoon the committee will be hearing from some very important people—the uniformed service chiefs of each of the military services. Senator Warner and I asked the Chiefs to focus their testimony on the role of their service in the implementation of the new military strategy, their services' current capability to fulfill the operational requirements of the unified and specified combatant commands, their assessment of their services' current operational deficiencies, if any, and the extent to which the budget request and the Future Year Defense Plan correct these deficiencies. We also asked them to give us their initial assessment of the performance of the personnel and systems in Operation Desert Shield/Desert Storm, any lessons they may have learned, and their judgment as to the impact, particularly of the Goldwater-Nichols reorganization bill, on the effectiveness of these military operations.

I will ask unanimous consent that our letters of invitation be included in the record. Without objection, they will be.

[The information follows:]

U.S. Senate,
Committee on Armed Services,
Washington, DC, March 7, 1991.

Gen. Carl E. Vuono, USA,
Chief of Staff, Pentagon, Room 3E668
Washington, D.C.

Dear General Vuono:

We would like to invite you to testify with the other Service Chiefs on Tuesday, March 19 at 2:00 p.m. on the FY1992-93 Defense Budget Request and the FY1992-1997 Future Year Defense Plan.

The Committee has already received testimony from Secretary Cheney and General Powell on the new military strategy, the FY1992-93 Budget Request and the Future Year Defense Plan, and from Director Webster and General Soyster on the global threat. We have also heard from outside witnesses on trends and developments in the Soviet Union and Eastern Europe. During the coming days, we will be hearing from the unified and specified combatant commanders.

The Committee will be particularly interested in your views on the Army's role in the implementation of the new military strategy; the Army's current capability to fulfill the operational requirements of the unified and specified combatant commands; your assessment of the Army's current operational deficiencies; and the extent to which the FY1992-93 Budget Request and the Future Year Defense Plan (FYDP) correct those deficiencies. We would also like to hear your initial assessment of the performance of Army personnel and systems in Operations Desert Shield/Desert Storm, any lessons that may have been learned, and your judgment as to the fact that the Goldwater-Nichols Department of Defense Reorganization Act of 1986 had on the effectiveness of those military operations.

Thank you for your willingness to testify. If you have any questions, please do not hesitate to contact us, or to have your staff contact Mr. Rick DeBobes (224-7530) of the Committee staff. We look forward to hearing your testimony.

Sincerely,

SAM NUNN,
Chairman.
JOHN W. WARNER,
Ranking Minority Member.

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC, March 7, 1991.

Adm. FRANK B. KELSO II, USN,
Chief of Naval Operations,
Department of the Navy,
Washington, D.C.

DEAR ADMIRAL KELSO:

We would like to invite you to testify with the other Service Chiefs on Tuesday, March 19 at 2:00 p.m. on the FY1992-93 Defense Budget Request and the FY1992-1997 Future Year Defense Plan.

The Committee has already received testimony from Secretary Cheney and General Powell on the new military strategy, the FY1992-93 Budget Request and the Future Year Defense Plan, and from Director Webster and General Soyster on the global threat. We have also heard from outside witnesses on trends and developments in the Soviet Union and Eastern Europe. During the coming days, we will be hearing from the unified and specified combatant commanders.

The Committee will be particularly interested in your views on the Navy's role in the implementation of the new military strategy; the Navy's current capability to fulfill the operational requirements of the unified and specified combatant commands; your assessment of the Navy's current operational deficiencies; and the extent to which the FY1992-93 Budget Request and the Future Year Defense Plan (FYDP) correct those deficiencies. We would also like to hear your initial assessment of the performance of Navy personnel and systems in Operations Desert Shield/Desert Storm, any lessons that may have been learned, and your judgment as to the fact that the Goldwater-Nichols Department of Defense Reorganization Act of 1986 had on the effectiveness of those military operations.

Thank you for your willingness to testify. If you have any questions, please do not hesitate to contact us, or to have your staff contact Mr. Rick DeBobes (224-7530) of the Committee staff. We look forward to hearing your testimony.

Sincerely,

SAM NUNN,
Chairman.
JOHN W. WARNER,
Ranking Minority Member.

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC, March 7, 1991.

Gen. MERRILL A. MCPEAK, USAF,
Chief of Staff, Pentagon, Room 4E924
Washington, D.C.

DEAR GENERAL MCPEAK:

We would like to invite you to testify with the other Service Chiefs on Tuesday, March 19 at 2:00 p.m. on the FY1992-93 Defense Budget Request and the FY1992-1997 Future Year Defense Plan.

The Committee has already received testimony from Secretary Cheney and General Powell on the new military strategy, the FY1992-93 Budget Request and the Future Year Defense Plan, and from Director Webster and General Soyster on the global threat. We have also heard from outside witnesses on trends and developments in the Soviet Union and Eastern Europe. During the coming days, we will be hearing from the unified and specified combatant commanders.

The Committee will be particularly interested in your views on the Air Force's role in the implementation of the new military strategy; the Air Force's current capability to fulfill the operational requirements of the unified and specified combatant commands; your assessment of the Air Force's current operational deficiencies; and the extent to which the FY1992-93 Budget Request and the Future Year Defense Plan (FYDP) correct those deficiencies. We would also like to hear your initial assessment of the performance of Air Force personnel and systems in Operations Desert Shield/Desert Storm, any lessons that may have been learned, and your judgment as to the fact that the Goldwater-Nichols Department of Defense Reorganization Act of 1986 had on the effectiveness of those military operations.

Thank you for your willingness to testify. If you have any questions, please do not hesitate to contact us, or to have your staff contact Mr. Rick DeBobes (224-7530) of the Committee staff. We look forward to hearing your testimony.

Sincerely,

SAM NUNN,
Chairman.
JOHN W. WARNER,
Ranking Minority Member.

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC, March 7, 1991.

Gen. A. M. GRAY, USMC,
Office of the Commandant,
Code CMC, Headquarters, U.S. Marine Corps,
Washington, D.C.

DEAR GENERAL GRAY:

We would like to invite you to testify with the other Service Chiefs on Tuesday, March 19 at 2:00 p.m. on the FY1992-93 Defense Budget Request and the FY1992-1997 Future Year Defense Plan.

The Committee has already received testimony from Secretary Cheney and General Powell on the new military strategy, the FY1992-93 Budget Request and the Future Year Defense Plan, and from Director Webster and General Soyster on the global threat. We have also heard from outside witnesses on trends and developments in the Soviet Union and Eastern Europe. During the coming days, we will be hearing from the unified and specified combatant commanders.

The Committee will be particularly interested in your views on the Marine Corp's role in the implementation of the new military strategy; the Marine Corp's current capability to fulfill the operational requirements of the unified and specified combatant commands; your assessment of the Marine Corp's current operational deficiencies; and the extent to which the FY1992-93 Budget Request and the Future Year Defense Plan (FYDP) correct those deficiencies. We would also like to hear your initial assessment of the performance of Marine Corps personnel and systems in Operations Desert Shield/Desert Storm, any lessons that may have been learned, and your judgment as to the fact that the Goldwater-Nichols Department of Defense Reorganization Act of 1986 had on the effectiveness of those military operations.

Thank you for your willingness to testify. If you have any questions, please do not hesitate to contact us, or to have your staff contact Mr. Rick DeBobes (224-7530) of the Committee staff. We look forward to hearing your testimony.

Sincerely,

SAM NUNN,
Chairman.
JOHN W. WARNER,
Ranking Minority Member.

Chairman NUNN. It should be noted that in addition to their roles as military heads of their respective services, our witnesses are also members of the Joint Chiefs of Staff. In that capacity they are military advisors to the President and the Secretary of Defense, and were deeply involved, along with General Colin Powell, in providing advice on all aspects of Operation Desert Shield/Desert Storm.

I would say to each of you, congratulations. Our heartfelt congratulations to you and your staffs for your personal contributions and the contributions of the men and women in your services to the overwhelming success of that operation. The outcome was never in doubt by members of this committee. The way you pulled it off, the way that minimized American casualties, and the exemplary way the plans were formulated, as well as executed, are a tribute to each of our services, to your training, and particularly to the men and women in the services. We thank all of you for your splendid performance.

As each of the Chiefs knows, the Senate passed the Persian Gulf personnel benefits bill last Thursday. We are working with the Appropriations Committees, as well as with the House Armed Services Committee, to conclude action in this important area before the Easter recess which is scheduled to start this Friday. The Senate bill has over $550 million in various benefits for our men and women in uniform and their families.

We have also—and I know that a number of you are interested in this—provided authority to allow the service Secretaries to waive personnel end-strength and grade ceilings for fiscal year 1991 because of Operation Desert Storm. These waivers are necessary to minimize personnel turbulence and to hopefully avoid involuntary separations as the military services draw down their strengths in the aftermath of the Persian Gulf war.

This action is consistent, I believe, with the approach taken by our committee last year of putting the services on a gradual personnel reduction glide-slope over a 5-year period, with the expectation that this would minimize any adverse actions on military personnel and their families. So we are trying to keep within the spirit of last year's bill, and we hope in implementing this broad authority you have for fiscal year 1991 you will keep that in mind.

I should note that the committee has anticipated that the military services may start fiscal year 1992 at higher strength levels than you have budgeted for. We provided in our bill that any additional cost that results from the exercise of the strength and grade waivers for fiscal year 1991 would be scored as an incremental cost of the Persian Gulf war to be paid for from the defense cooperation account.

At this time, I would like to welcome General Carl Vuono, Chief of Staff of the Army; Admiral Frank Kelso, Chief of Naval Operations; General Merrill McPeak, Chief of Staff of the Air Force; and General Al Gray, Commandant of the Marine Corps. We are delighted to have you with us and we look forward to hearing your testimony. I should note that it is customary for us to hear from the three service Secretaries prior to hearing from the service Chiefs; we are reversing the order this year because of scheduling conflicts, so we will hear from the service Secretaries tomorrow morning at 9:30 a.m. Before I turn to our witnesses today I will turn to Senator Warner for his opening remarks.

Senator WARNER. Thank you, Mr. Chairman. I join you in welcoming our distinguished guests, all of whom we have known and worked with for a number of years. I join also in your most appropriate comments regarding the extraordinarily professionalism by the men and women of the Armed Forces throughout this Gulf operation—the planning phase, the execution, and the logistics. It was, indeed, a land, sea, and air operation—and amphibious to a certain extent—each of those elements being carefully phased and well thought out and planned beforehand.

I note that the Chairman states that we are going to try and work with the spirit of the budget decisions we made in August prior to the Gulf situation. I think I could also add that we have open minds on this committee with respect to fundamental changes, if it is your viewpoint, in that program. We certainly would want to hear why you feel that, as a consequence of the Gulf operation lessons learned, that there may be some fundamental aspects of that budgetary program that should be revised.

Last, I had the opportunity this morning, together with the Chairman and others in the Senate and House leadership, to visit with the President. I expressed to him some concern that I had gathered in my most recent trip to the Gulf, having had the opportunity to speak with a number of our senior commanders as well as a very large number of the troops. The issue of linkage or non-linkage, as the case may be, between their rotation back home and the events which continually unfold inside Iraq, namely the insurgency of the Shiites from the south and the Kurds from the north. Is there linkage between the rotation schedules back, and is there linkage between the final date of the agreement which will be introduced in the United Nations this week providing for the ceasefire? We are operating under a provisional ceasefire at this time, and we anticipate U.N. action on a final version of the ceasefire in the very near future.

But you can understand yourselves, having served in the lower ranks at various points in your careers, when the Chairman of the Joint Chiefs makes a statement in a speech and unequivocally says that the recent military action with Iraq was such that Saddam Hussein can no longer project a threat beyond his borders. Now, you are out in the desert and you are thinking about going home and you see that your chief military person says there is no longer a threat. Then you read that we are going to be held here in our positions for a period of time as a consequence of the insurgency in Iraq or the uncertain timing of the ceasefire. I can understand the latter as perhaps being a basis for linkage.

I asked the President if he would try and clarify that, and he said indeed he would consult with his military advisors and others and clarify that issue, because I am deeply concerned about the families back here and the troops who are anxious to go home. They did the job. They were sent there to fulfill the 12 U.N. resolutions, to liberate Kuwait. None of us, I think, could have envisioned the insurgency now taking place internally in Iraq as being a possible basis for delaying the return of these troops. Thank you very much, Mr. Chairman.

Chairman NUNN. Thank you, Senator Warner. We welcome you back after, I know, a very tough trip out and back in 2 or 3 days. It is a very long way, and I am pleased that you were able to go on behalf of our committee and the Senate.

Senator **Warner**. Of course Senator Glenn and Senator McCain were there.

Chairman **Nunn**. Who else on our committee was there?

Senator **Warner**. Senator Coats, Senator Thurmond, and Senator Wallop. We were there in force.

Chairman **Nunn**. I did not know you had a quorum. I would have been worried. [Laughter.]

At this point I ask unanimous consent that Senator Dixon's and Senator Thurmond's opening statements be made a part of the record. Without objection, they will be.

[The prepared statements follow:]

Prepared Statement by Senator Alan Dixon

Mr. Chairman, at the outset, I want to say it is good to see the men and women finally coming home from the Gulf, home to the welcome they so rightly deserve as true American heroes.

It is a pleasure to have with us today a distinguished panel consisting of Generals Carl Vuono, Alfred Gray, and Merrill McPeak, as well as Admiral Frank Kelso. I look forward to hearing from them about the "defense authorization request for fiscal years 1992 and 1993" in relation to what they view as necessary for a strong national defense posture.

I am particularly interested in how they view their force structure in their specialized areas. As we draw down the force, I want to ensure there is enough emphasis on training, operations, and sustainability. We must make sure we do not end up with a hollow force.

I am also interested in our ability to move our troops and materiel on short notice over long distances. Although our record in Desert Shield/Storm on the surface appears favorable, we must remember that we had the luxury of time, over 5-months, without any hostile action.

Finally, I am also interested in our industrial base. I understand we are looking quite a few years down the road to the next generation for some of our major systems. Will the industrial base be there when we go to the next generation of systems, or will most of the companies be out of business?

I look forward to the testimony of our expert panel.

Thank you, Mr. Chairman.

Prepared Statement by Senator Strom Thurmond

Mr. Chairman: I join you in welcoming our Nation's top military leaders to today's hearing on the 1992 defense authorization budget request. As the services' senior officers they, as a group, have been instrumental over the past several years in putting together the forces that gave us the dramatic victory over the forces of Saddam Hussein.

Having just returned from a trip to Saudi Arabia and Kuwait, I can attest to the capabilities and professionalism of the forces representing our great Nation. Every commander I spoke with raved about our young men and women in uniform—both Active duty and Reserve components.

Although the individual men and women of our Armed Forces were ultimately responsible for our great success in the Persian Gulf, the top notch equipment provided to the services by the Congress and the American taxpayers assured us of victory. There is no doubt that our Nation's technical superiority, coupled with the tremendous logistic effort, were the keys to victory.

Our fighter aircraft, the M-1 tank, the Bradley fighting vehicles, multiple rocket launcher system, J-Stars, AWACS, Tomahawk cruise missile, and the Patriot System exceeded everyone's highest expectations. We should not, however, rest on our laurels. The war in the Persian Gulf is history, and we must now begin planning for the next contingency.

Mr. Chairman, I am concerned that the defense budgets proposed over the next 5 years will not allow this Nation to maintain its military superiority. We have heard repeated testimony that the forces we are projecting for 1995 will be the bare minimum. In fact, several of our witnesses have testified that the projected force structure would not give us the capability to meet another Desert Storm-type operation.

Secretary Cheney and Chairman Powell have both testified that they might have to revisit the defense budget rampdown at a later date if the world situation changes. Mr. Chairman, I hope this committee will take a close look at what this Nation's defense posture will be in 1995. We cannot be caught short. It has taken more than a decade to build the forces we have today; we must not throw away that capability in the next 5 to 6 years.

General Vuono, Admiral Kelso, General McPeak, General Gray, you are the leaders of the finest military force this Nation has ever fielded. I hope you will speak forcefully and without hesitation to both the Congress and the civilian leadership in the Department of Defense when you believe that force is in jeopardy.

Thank you Mr. Chairman.

Chairman NUNN. General Vuono, we will start with you today.

STATEMENT OF GEN. CARL E. VUONO, USA, CHIEF OF STAFF, U.S. ARMY

General VUONO. Mr. Chairman, it is a privilege to appear before the committee again as we conclude Operation Desert Storm, which has been, in my view, one of the most successful joint military operations in the history of our country. We could not have accomplished the operation without the support of you, Mr. Chairman, the members of your committee, the American people, and, above all, the magnificent performance of the troops in both the Active and the Reserve components.

We built the Army of Operation Desert Storm on an uncompromising adherence to what I call six fundamental imperatives. They have guided the Army today, and we are using them as we look to the future. Simply put, it says you have to have great soldiers who are trained to a razor's edge, who know how to fight, who have the best equipment that technology can provide them, and, above all, have outstanding sergeants and officers who have honed their skills throughout a lifetime of service. Today, that is the kind of Army we have. That is the kind of Army we want to maintain in the years ahead.

Our focus in the Army today is on simultaneously moving along three vectors. First, we must properly redeploy and reconstitute our victorious forces from the Gulf. This process includes a return of units both to the United States and to Europe and the demobilization of almost 150,000 Reserve component soldiers.

Second, we must maintain the trained and ready forces that we have today to meet ongoing commitments and to respond to contingencies worldwide. Now, just how ready must our forces be? I do not have to remind this committee that we committed soldiers to combat on short notice twice within the last 14 months. One Patriot unit deployed from Europe and was operational in Israel in less than 20 hours from the time the alert order was issued. With time lines like that, there is not much time for correcting readiness deficiencies.

Finally, the third vector is that we remain committed to a comprehensive plan for reshaping the Army to our vision of the future—an Army trained and ready to defend our vital national defense interests wherever they might be threatened.

Our original plan, which I laid out before the committee last year, has proven to be remarkably resilient. You will recall we concluded that the evolving international environment required an Army with three fundamental characteristics—versatility, deployability, and lethality. These characteristics, along with a requirement to expand the Army as a hedge against the uncertain future and the demands of the new strategy, form the basis for our efforts to reshape the Army.

Let me just touch on the essence of that new national military strategy. It is a visible, capable, power projection capability. It should be recognized that you cannot execute this strategy without trained and ready forces and without adequate strategic lift.

When our planned reductions have been completed, the Army of the mid-1990s will be reduced to its smallest size since World War II. It will be a perilously small ground force for a nation with superpower responsibilities. It is my view that at these force levels we must minimize the risks inherent in a smaller force by limiting the turbulence created by rapid force reductions.

Tragic lessons of history have taught us that we cannot expect to field ready forces if we squander quality and readiness. I want to take you back to right after World War II. In the 5 years following World War II, the Army was reduced in size by 7.5 million men, including over 60,000 soldiers in the 18 months just prior to the start of the Korean war. This rapid drawdown, combined with very tight post-war budgets, fractured the victorious Army of World War II.

At the start of the Korean war, in June 1950, the U.S. Army was undermanned, ill-equipped, and poorly prepared. Our Nation had clearly lost its vision of a trained and ready Army. What was the price of this shortsightedness? On July 4, 1950, Task Force Smith of the 24th Infantry Division was attacked by a North Korean division. While its soldiers fought valiantly with outdated weapons, Task Force Smith was quickly penetrated by North Korean tanks. Task Force Smith lost almost one-third of its soldiers and one-half of its officers in the initial engagement. The 24th Infantry Division as a whole suffered 3,000 casualties in the first 10 days of the war. We never seized the initiative and that war went on for 3 more years.

Now let me take you to 40 years later, 1990–1991. That same 24th Infantry Division, equipped with Abrams tanks, Bradleys, Apaches, multiple-launch rocket systems, manned by great soldiers, plunged over 150 kilometers into Iraq in 14 hours. They crushed enemy forces in their path, and by the end of the operation, the division had sliced its way through over 300 kilometers of Iraqi territory, destroying or capturing hundreds of tanks, armored vehicles, and artillery pieces, and capturing over 3,000 Iraqi soldiers. The initiative was never lost, and the war was over in 100 hours. In 1991, that same victory division—the 24th Infantry Division—ended all of that and did it all with less than 50 battle casualties.

We face a clear choice. We can maintain the standards of the Army of Desert Storm, or we can condemn tomorrow's soldiers to the deadly futility of going into battle unprepared, as we did in 1950.

We believe we have made the correct choices in our plans for the future by consciously choosing to preserve the quality, readiness, and warfighting competence of the Army at the cost of reducing it to the smallest level in a half century. With a smaller Army, we must keep it second to none. In my judgment, quality and readiness are essential, not optional. There is no substitute for quality and there can be no retreat from readiness.

It has taken over a decade, Mr. Chairman, to build the kind of Army that we have today. It has come about through the vision of many people, and I think we must exercise that same far-reaching vision as we reshape the force, recognizing that the Armed Forces that we build today will be our legacy in the future. We cannot permit force reductions and tight post-war budgets to fracture the victorious Army of Operation Desert Storm.

I would conclude by thanking you and the members of this committee for the great support you have given me over the past 4 years. The all-volunteer professional Army that we have built has clearly been a resounding success. I have been privileged to be a part of it. Thank you.

[The prepared statement of General Vuono follows:]

Prepared Statement by Gen. Carl E. Vuono, Chief of Staff, United States Army

Mr. Chairman and members of the committee:

It is a privilege for me to appear before the committee today to report on the state of the United States Army and to explain the Army's plans and priorities for fiscal years 1992 and 1993 and beyond. There is a striking irony in testifying on the Army's future—basically on our blueprint for reducing the Army to its smallest size since before World War II—while the United States has over one-half million men and women deployed on the Arabian Peninsula completing one of the most successful military campaigns in the history of warfare. This situation is unprecedented in our history. It should make us all stop to consider the risks—for there are, indeed, risks associated with the course we are on—inherent in building down the most trained and ready Army in our Nation's history during a period of intense international turbulence.

I want to begin my testimony today, much as the Secretary of Defense did several weeks ago, with an important caveat. This budget is based on some extremely positive assumptions about the continuation of the democratic and cooperative trends in the Soviet Union and the outcome of Operation Desert Storm. Should the Soviet Union return to the aggressive and confrontational policies of the past, we should substantially reexamine the military posture we are projecting for the future. Further, we will reevaluate the schedule for building down the force now that Operation Desert Storm has been concluded. With that in mind, this is the first budget of the Army's 6-year program, and it represents the continuation of our plan to shape a smaller, capable Total Force for the future.

Our Army today is the best in the world and is an indispensable instrument of national policy. Those standards must be our overarching objective as we shape the Army of tomorrow. We must ensure that our near-term actions do not foreclose essential options that our future national leaders may need to protect our Nation's vital interests in the crises of this decade and beyond. We must avoid hasty decisions that will have an adverse impact on our victorious, volunteer forces.

Clearly, no other military in the world could have matched the feats of American Armed Forces in Operation Desert Storm. However, we must keep in mind that the Army of Desert Storm did not materialize overnight. Our forces have been arduously built over the past decades through the vision of our predecessors, yours and mine, in the Congress, in the administration, and in the Army, with the support of the American people. It is now our turn to exercise the same far-reaching vision, recognizing that the Armed Forces that we build today will be our enduring legacy to the future.

INTERNATIONAL SECURITY ENVIRONMENT

In the years ahead, the United States will face a security environment that is demanding, diverse, and dangerous. The brutal Iraqi invasion of Kuwait has been a violent reminder of the vulnerability of the global political and economic order, the variety of threats and challenges to U.S. national interests, and the sophisticated warfighting capabilities of many developing countries. Further, while the new Soviet non-confrontational, and even supportive, policy toward the United States and its allies and the Treaty on Conventional Armed Forces in Europe (CFE) are heartening examples of what the future can hold, the forces that have fostered change and turmoil worldwide continue to produce an environment of almost unprecedented uncertainty. As the Soviet Union and its former allies struggle to shed the burdens of the past, the daunting goal of simultaneously converting from command-directed economies and communist political systems to market economies and democracies is proving unattainable in the short term. The recent Soviet use of military force to suppress dissent in the Baltic Republics may be a harbinger of violent times in the future of the Soviet Union.

To be sure, the positive developments in the Soviet Union and Central Europe have changed both the sources and the form of security challenges to the United States. The near-term threat of a U.S.-Soviet conflict has surely ebbed to a post-World War II low. At the same time, however, we face an ever widening array of challenges outside the confines of Europe. As new centers of economic, military, and political influence are taking shape, the continuing integration of the world economy and the mounting importance of transnational issues command the deep involvement of the United States in the international community.

As Iraq's unprincipled aggression demonstrates the potential impact that powerful regional states can have on the world's economic and political order. It is harsh reality that major threats and challenges are likely to arise from the interstate and internal conflicts that menace important friends and allies or that directly affect U.S. interests. Further, the growing diffusion of power around the world suggests that multilateral security arrangements—such as the Desert Storm coalition—must continue to be developed and nurtured to enhance U.S. security and the prospects for peaceful change worldwide. This will by no means be an easy feat. Indeed, as we craft these cooperative arrangements and define shared costs and obligations, we will be increasingly challenged as developing countries become militarily powerful and their interests and those of our own Nation and our coalition partners diverge.

Furthermore, instead of the clear and predominant Soviet-led threat, the United States now faces multiple challenges in the forms of a still potent Soviet capability; continuing regional instability; the proliferation of nuclear, chemical, missile, and other military technology to many developing countries; and aggressive, well-armed regional powers. International drug trafficking, state-sponsored terrorism, insurgency, and subversion of legitimate regimes also continue to pose serious threats to U.S. interests around the world. The post-Cold War era clearly has begun, but with the volatility and unpredictability so characteristic of major transitional periods. We have not yet found the hoped-for and well-deserved respite from four decades of superpower confrontation. In the face of such unpredictable and varied threats, a versatile, deployable, and lethal Army that is trained and ready remains an essential component of the military posture of the United States.

NATIONAL SECURITY STRATEGY

The national security strategy of the United States is evolving to guide the Nation's defense capabilities for the changing international environment. This evolution has fundamental implications for the way that we develop and structure Army forces and perform our strategic roles.

The fundamental objectives of U.S. national security strategy are likely to endure. The Nation, in conjunction with allies whenever possible, will continue to seek to deter or defeat aggression, ensure U.S. global access and influence, promote regional stability and cooperation, staunch the flow of illicit drugs into the United States, and combat terrorism.

While these objectives will endure, the ways and means to achieve them are changing. We must carefully manage the change so that we can maintain the continuity of capabilities necessary to protect vital U.S. interests now and in the future. The United States must continue to maintain sufficient conventional and nuclear capabilities to counterbalance the substantial Soviet military power that will exist for the foreseeable future. However, the end of the Cold War, and with it the reduction of Soviet adventurism around the world, have permitted a fundamental realignment in the focus of U.S. security strategy. Our national military strategy has shifted away from containment of the Soviet Union and forward defense. Our new strategy calls for achieving U.S. objectives by the projection of power to threatened areas to avert or respond to crises; by forward presence in peacetime relying less on forward-deployed forces; and by the ability to reconstitute a larger, effective defense capability should the need arise. While this strategic concept of reconstitution is not entirely new, its significance will expand substantially as the size of U.S. Armed Forces decreases. With smaller forces, the United States must rely increasingly on a well-developed capacity to generate (mobilize, train, and equip) the additional forces necessary to confront the Soviet Union and other potential adversaries on a large scale. Maintaining this national capability will involve the discipline and foresight to develop and preserve the mobilization apparatus and infrastructure, the defense industrial base, and the technology base, and to maintain a stockpile of critical materials.

This evolving strategy has fundamental implications for the Army, requiring both the reshaping of Army forces and the adjustment of the Army's strategic roles in support of the new strategy. For example, regional instability, the increasing technological soph istication of armies throughout the world, and the impossibility of maintaining U.S. forces in every potential global trouble spot will place a greater premium on the capability to project power rapidly from the continental United States (CONUS) or from forward-deployed locations. With fewer units based abroad, the United States must be capable not only of rapidly deploying trained and ready forces to crisis locations worldwide, but of massing these forces quickly enough to overwhelm potential opponents and of sustaining these deployed forces in austere environments. Our power projection capability must be indisputable because it is central to the Nation's continued ability to deter aggression and to defend vital interests worldwide. This is the essence of the new strategy.

Second, there is a diminishing U.S. requirement to maintain large standing conventional forces abroad ready for immediate use to counter a short-notice Soviet attack. Similarly, the requirement for rapid reinforcement of NATO is reduced. Nevertheless, a prudent and pragmatic recognition of global uncertainties demands that the United States continue to maintain capable and credible forces forward deployed in Europe, Asia, and other areas of vital strategic interest, although at lower levels than in the past.

Third, deteriorating economic situations in developing countries, especially when coupled with the possibilities for international terrorism and narcotrafficking, are demanding an expanded role for military forces in peacetime operations aimed at assisting the threatened countries to enhance their domestic stability and democratic development. Assistance programs, focused primarily on training, will take on increasing importance as forward deployments of U.S. forces and the overall size of the U.S. Armed Forces are reduced.

Fourth, the increasing time that will be available to detect and counter a major Soviet retrenchment or threat of renewed aggression in Europe permits the United States to rely for these eventualities on the capability to reconstitute additional force over a longer period of time. This, in turn, has enabled the Army to reduce the size of our Total Force and to adjust our force generation model the construct by which the Army plans to maintain forces for commitment over time. The model is based on the ability of our forces to maintain essential levels of warfighting capability in peacetime and on the likely length of time necessary to mobilize, equip, and train these forces prior to their employment. In the future, the Army's contribution to deterring a protracted major conflict will, necessarily, rely on our ability to generate these additional forces when they are required. Moreover, the Army will rely significantly on the Reserve components for prolonged conflicts, crises, and other unplanned major deployments.

Finally, arms control has become a central means of accomplishing the U.S. national security strategy's goals of stability and deterrence at lower force levels. Assuming that current disagreements are resolved, the ratification and implementation of the CFE Treaty will allow the Army to safely and substantially reduce our European-based forces as Soviet forces are withdrawn from Central Europe. Within the limitations of the CFE Treaty, the United States will preserve the military commitment to the Atlantic Alliance with the continued basing of a two-division corps in Europe, while working with the allies to enhance the integration of our forces.

THE ARMY'S STRATEGIC ROLES

The Army fulfills vital strategic roles for the Nation, and our trained and ready forces remain crucial to the execution of U.S. national security strategy. As this strategy is changing to cope with the evolving international environment, the Army is adjusting the way we perform our strategic roles to effectively meet the Nation's requirement for a force organized, trained, and equipped for prompt and sustained land combat worldwide.

First, the Army maintains combat-ready land forces—armored, light, and special operations—for crisis response and other immediate requirements worldwide. All active component Army forces can be rapidly deployed to regions of potential conflict and assigned to the theater commanders in chief (CINC) in tailored force packages to deter conflict or, if necessary, to fight and win. Operations can range from relatively small actions to protect or evacuate U.S. citizens to much larger regional conflicts, such as Operation Desert Storm. The Army, therefore, plans to tailor our forces to ensure that the appropriate mix of armored, light, and special operations forces is available to meet the myriad situations the Nation is likely to face in the years ahead.

The unpredictability of the future international environment will require a contingency force that is prepared for immediate deployment without delays for additional training. Hence, rapid initial deployment capabilities must be provided by primarily Active component units. Additionally, because of the increasing proliferation of armored systems in developing countries and the need to quickly mass overwhelming force, the Army must have available in the CONUS-based Active component force two fully structured armored divisions for contingency missions (rather than only partially structured divisions as we have now). The Active Army will be configured to sustain deployed units for about 30 days without substantial Reserve component augmentation. Reserve component units will continue to fulfill their critical responsibilities to provide required individual and unit combat, combat support, and combat service support augmentation.

Second, the Army provides forward presence with units based abroad in areas of vital interest to the United States as well as with units based in CONUS. The Army plans to reduce the number of forward-deployed forces where the situation warrants but to retain sufficient forces overseas to sustain U.S. alliance commitments and to contribute to regional stability. Even in an era of a reduced Soviet threat, the forward presence of Army forces will remain essential to accomplishing our Nation's objectives and the Army will enhance its ability to maintain forward presence through periodic deployments of Army units and soldiers. These forces will participate in joint and combined exercises, conduct training of host nation soldiers and units, participate in nation assistance, provide support to counternarcotics efforts, and provide other assistance as required—all to protect mutual security interests.

Third, the Army maintains forces in CONUS able to reinforce forward-deployed and contingency forces. Through reinforcement, the Army ensures that sufficient forces are available to overwhelm any opponent and to fight and win on the battlefields of today and tomorrow. Because of the substantially reduced size of the Active component, the Army will depend heavily on the timely mobilization of Reserve forces for major and prolonged contingencies. We also will continue to refine the capability to reinforce from forward locations, as demonstrated with the deployment of VII Corps from Europe in support of Operation Desert Storm. Our current plans envision generating the majority of our reinforcing forces from CONUS. Our early reinforcing forces will be Active component divisions rounded out by Reserve component combat brigades. These units will be capable of early reinforcement of deployed forces or dealing with a second contingency after a period of time for Reserve component call-up and training. Follow-on reinforcing units will consist of fully structured Reserve component combat divisions that will be available after a more extended period for mobilization and training. For more protracted requirements, we are studying the utility of cadre divisions—units designed to fill the gap between follow-on reinforcement units and wholly new units that can only be generated after total mobilization. The Army is currently examining concepts for cadre divisions. In general, cadre divisions would be partially manned and equipped in peacetime and be filled and trained in the event of war. Finally, we would raise, equip, and train wholly new forces following total mobilization. Maintaining the mobilization and industrial bases and providing adequate resources for Reserve component forces will be essential to the viability of U.S. national military strategy.

Fourth, the Army participates in disaster relief, emergency assistance, and interdiction of illicit drugs. The Army continues to provide support to civil authorities, most prominently in the area of counternarcotics. In recognition of the serious threat that illegal drug use poses for the Nation, the Army has expanded our role considerably in the effort to reduce narcotics trafficking. The Army also continues to provide disaster relief and emergency assistance when called upon by civil authorities.

Finally, the Army provides support to allied and friendly nations through peacekeeping, security assistance, and army-to-army initiatives. U.S. strategy is coalition-based, relying upon the combined action of U.S. and allied forces. The Army will continue to play an important role in fostering cooperative relations between the United States and other nations. Enhancing stability and democratic political development will become an increasingly important and cost-effective means of combating instability as U.S. defense budgets decline.

THE ARMY'S THREE VECTORS

The focus of the Army today is on simultaneously meeting the requirements of three critical tasks that lie along three separate but interrelated vectors.

First, we must provide all the support necessary to accomplish U.S. national objectives in Operation Desert Storm. As we have seen, the Army was central to success, particularly to the eviction of the Iraqi army from Kuwait. Yet our job is by no means done. As in any military operation, the Army's commitment to Operation Desert Storm includes the obligation to prudently redeploy and reconstitute the force now that hostilities have been concluded. Second, we must maintain a trained and ready force to meet ongoing commitments worldwide and for rapid action in unforeseeable contingencies. And, finally, we must continue to shape the Total Force for the future.

— Operation Desert Storm

On February 23, the United States and its coalition partners faced more than 43 Iraqi divisions, thousands of tanks, and half a million Iraqi soldiers in the Kuwaiti Theater of Operation. One hundred hours later, the Iraqi army lay shattered and burning, and organized resistance had ceased. Although more remains to be done, it seems clear that the allied coalition has won an unprecedented victory. We should not forget, however, that this success is the culmination of almost 7 months of arduous work and a decade of planning, investment, and training.

The reaction of the United States and its coalition partners to the Iraqi invasion of Kuwait on August 2 and the eviction of the Iraqi army from Kuwait was spearheaded by trained and ready American land, air and naval forces. Indeed, it is no exaggeration to assert that the President drew his line in the sand with the bayonet of an 82nd Airborne Division paratrooper. The first U.S. soldier was on the ground within 31 hours of the time the initial alert order was given. The remainder of the division and Patriot air defense units followed closely behind, moving by air to secure the ports and arrival airfields that the force would need. The deployment of combat-ready air assault and armored units by air and fast sealift quickly complemented the capabilities of the early deploying and lighter Army and Marine Corps forces. The 24th Infantry Division (Mechanized), from Fort Stewart, Georgia, arrived in theater closely behind the airlanded Army forces and the Marine Corps' Maritime Prepositioning Ships. Armed with over 200 M1 and M60A3 tanks and over 200 Bradley fighting vehicles, the arrival of the 24th Infantry Division in mid-September significantly enhanced the combat power available to the theater commander. This initial force was combat-ready on the ground in about 35 days.

This combat power was further bolstered with the arrival of the 101st Airborne Division (Air Assault) from Fort Campbell, Kentucky, in early October, and the arrival of the 3rd Armored Cavalry Regiment from Fort Bliss, Texas, and the 1st Cavalry Division from Fort Hood, Texas in mid-October. All of these units were placed under the control of the XVIII Airborne Corps. Together they provided the CINC the combat capability—over 700 main battle tanks, over 600 infantry fighting vehicles and almost 150 Apache helicopters—necessary to effectively defend Saudi Arabia in conjunction with our sister services and coalition partners.

As the XVIII Corps and supporting units completed their movement, another Army armored corps—VII Corps—was deployed to the theater to provide the coalition a powerful counter-offensive capability. VII Corps deployed from the U.S. Army Europe with the 2d Armored Cavalry Regiment, the 1st and 3d Armored Divisions, and a forward-deployed brigade from the 2d Armored Division. The 1st Infantry Division (Mechanized) which deployed from Fort Riley, Kansas, was also assigned to it. Although these forces did not begin to move until the end of November, all of the combat elements of these units are currently combat ready in Saudi Arabia. Taken together, the U.S. Armed Forces have projected more combat power over greater distances in less time than ever before and have demonstrated a capability not lost on potential adversaries.

Another significant aspect of the deployment of Army forces in Operation Desert Storm was our in-theater modernization program. This represented the concerted effort by the Army to ensure that our soldiers were equipped with the most capable systems available, a sacred obligation I believe we have to every soldier. Modernization required the movement of a variety of equipment—M1A1 tanks, Bradley fighting vehicles, Heavy Equipment Transporters and the latest logistical support vehicles—from depots and storage facilities worldwide. Based on the results of the ground campaign, this program was well worth the effort.

The major Army systems employed in Operation Desert Storm, developed over the past several decades, served our soldiers extremely well. In one of the harshest combat environments in the world, all major Army land and air systems operated superbly and exceeded Army performance and readiness goals. The Apache helicopter has been used effectively and extensively and has consistently exceeded Army readiness goals. Two batteries of the Army Tactical Missile System (ATACMS) were initially fielded during Operation Desert Storm and have also been effectively employed. The now world-famous Patriot PAC-2 missile (also initially fielded during Operation Desert Storm) has achieved spectacular results. Additionally, the Air Force Joint Surveillance and Target Attack Radar System and the Army Interim Ground Station Modules have combined to provide effective wide-area surveillance and deep targeting support to coalition air and land force commanders. Numerous other systems such as the Abrams Tank, the Bradley Fighting Vehicle, the Multiple Launch Rocket System and the Copperhead 155mm guided projectile have also enjoyed great success. If there was ever any doubt, it should now be clear that our modernization efforts have produced weapon systems that exploit our Nation's technological advantages and give our soldiers the lethality they need to win and survive.

The vast deployment of soldiers and equipment to Saudi Arabia and the decisive defeat of the Iraqi army were truly joint efforts that involved the Total Force. In August, the President authorized the call-up of the Selected Reserve to permit the use of Reserve component combat support and combat service support units and individuals whose unique skills and capabilities were essential for the success of the deployment. In November, this initial authority was expanded to increase the Army's call-up authorization and to provide for the call-up of Reserve component combat units for 180 days (with the option of renewing this for a second 180 days). On January 18, 1991, the President signed an executive order that increased the Army's call-up authorization to 220,000 soldiers for a period not to exceed 12 months and permitted the Army to call up Individual Ready Reservists in addition to members of the Selected Reserve.

To date, the Army has called up almost 150,000 soldiers and over 1,000 units from virtually every State, the District of Columbia, Puerto Rico, and Guam. Thousands of these soldiers are serving overseas in Saudi Arabia, providing such critical capabilities as water purification and distribution, transportation, port operations, fuel handling, supply and services, maintenance, and medical support. Many others serve in CONUS and overseas, assisting the deployment in such functional areas as port security and terminal operations. In addition, activated Reserve soldiers and units are filling critical responsibilities and functions left vacant by Active units deployed to Saudi Arabia. This latter category includes medical, legal, military police, and air ambulance units, as well as garrison support units and engineers.

Selected combat units, such as Army National Guard artillery brigades and three round-out maneuver brigades of Active Army divisions, also have been called to active duty. These units are now either in Saudi Arabia or undergoing post-mobilization training at Fort Hood, Texas, and Fort Irwin, California. The 142d Field Artillery Brigade, consisting of 8" Howitzer and MLRS battalions from the Arkansas and Oklahoma ARNG, was called up in late November and deployed in late January. The 196th Field Artillery Brigade, consisting of 8" and 155mm Howitzer battalions from the Tennessee, Kentucky, and West Virginia ARNG, was called up in early December and deployed in early February. The brigades in Saudi Arabia are performing well, making a substantial contribution to the Army's firepower in the desert.

I have visited each of the round-out brigades—the 48th Infantry Brigade, Georgia ARNG; the 155th Armored Brigade, Mississippi ARNG; and the 256th Infantry Brigade, Louisiana ARNG—several times throughout their training. They are working hard to hone their individual and unit combats skills, and I am confident that they will perform well, if and when they are deployed. I should note that the task facing these maneuver brigades—that of effectively integrating the combined arms capabilities of their armored, mechanized infantry, aviation, and artillery units—is one that requires extensive training to master effectively. It is, however, a precondition for victory and survival on today's battlefield.

We also cannot forget the magnificent performance of the logisticians of the Total Force. In the first 80 days, the deployment system moved over 170,000 soldiers and civilians and over 160,000 tons of cargo by air, and over 7,500,000 square feet of cargo and equipment into the area of operations by sea, and another almost 3,000,000 square feet of cargo were enroute. The 1192d Terminal Transfer Unit (USAR), working out of Beaumont, Texas, alone moved 1.3 million square feet of cargo onto 12 ships during the 7 weeks it was on active duty—three times the normal work load. Receiving, processing, and distributing this cargo and equipment and these soldiers and civilians, took a herculean effort.

As the deployment of Army units and equipment continued with the movement of the additional units in November, the logistical challenge increased dramatically. The challenges of long supply lines, an austere infrastructure, and the harsh desert environment were met with the professionalism and imaginative logistics strategies you would expect of America's Army. Equipment readiness, supplies and services, support to other services, host nation support, security assistance, transportation, and industrial readiness are all logistical functions that have been critical to the success of the operation.

The success of the ground campaign also rests substantially on the sturdy shoulders of our logisticians. Never before has an eight-division force equivalent moved so far, so fast against a fighting enemy. The bold maneuver that brought about the defeat of the Republican Guard and broke the back of the Iraqi army would not have been possible without the most imaginative and aggressive logistical support in history.

Now that the combat phase of the operation has concluded, it is imperative that we prudently reconstitute the force prior to continuing with its planned reshaping. (Note: The term "reconstitution" in this context applies to returning operationally deployed units to their prehostility levels of capability. It should not be confused with the strategic concept of reconstitution I discussed earlier.) I cannot overemphasize the importance of accomplishing this properly.

Let me give you an idea of the challenges facing the Army in this regard. First, we must take care of our people. We must rapidly, but not hastily, redeploy over 300,000 soldiers from Saudi Arabia and release approximately 150,000 reservists and 20,000 Active soldiers involuntarily retained on active duty through the Stop Loss Program. This must be done in a manner befitting soldiers who have served their Nation well.

We must return our equipment to pre-war levels of readiness and return it to unit locations and/or POMCUS or war reserve locations. This will be no easy task as we currently have over 7,500 combat vehicles and over 1,500 aircraft in theater. We must replenish our supplies and war reserve stockages. (I should note here that our plans for the redeployment take into consideration the future end-state of the Army for the mid-1990s. For example, we are structuring our plans to avoid shipping equipment to Europe, only to have it returned to the United States as the unit inactivates.) We must also return to the individual, unit, and leader development training programs that were so essential to the Army's success in the current operation. We must accomplish all this quickly and efficiently to ensure that we have the smallest possible decrement to the readiness of our forces.

Finally, the fact that Operation Desert Storm occurred as the Nation debated its future national security policy and the future size and composition of its Armed Forces has enabled the Army to examine some of the assumptions, policies, and capabilities that underlie our vision for the future. For example, the Total Force, the Ready Reserve Force (RRF), and the Civilian Reserve Air Fleet were all employed in this operation. The lessons of Operation Desert Storm will be extremely useful in refining our plans, programs, and policies for the future. As these lessons are reviewed, however, we cannot allow ourselves to become transfixed by the "last war." The Army requires capabilities that enable it to operate from peacetime engagement to general war. Especially in this era of declining defense resources, lessons learned must be applied toward improving the versatility, deployability, lethality, and expansibility of the Total Army and not restricted to "quick fixes" for shortcomings identified in the current operation.

I know that you are extremely proud of the efforts and performance of the men and women of America's Armed Forces in Operation Desert Storm. Members of this committee have played a significant role over the past decade in creating the quality force that is the overarching reason for our success. You can be justifiably proud of your roles in providing the basis for the most rapid and massive projection of combat power and one of the most successful combat operations in history.

— Sustained Readiness

Even as we focus on completing Operation Desert Storm, we must sustain readiness throughout the force, worldwide. In the turbulent post Cold War era we can't declare a "time out" to reconstitute.

Within the last 14 months, Army forces have been committed to major combat operations twice. Both operations required rapid, short-notice projection of combat power from the United States, and, in the latter case, from forward-deployed forces in Europe. Operations Just Cause and Desert Storm have unequivocally demonstrated the need to maintain a trained and ready Army throughout this period of great uncertainty.

In December 1989, the Army rapidly deployed light and special operations units to Panama where, in conjunction with armored units and the forces of the other services, they went directly into combat in less than 60 hours from the time they were alerted—in the middle of the night 2,000-3,000 miles away from their home bases. In response to the Iraqi invasion of Kuwait, as I have just discussed, the Army rapidly deployed forces over 8,000 miles from the United States to Saudi Arabia in as little as 31 hours from their initial alert notification. Our European-based forces were also deployed on short notice. In fact, one Patriot air defense missile section deployed from Europe to Israel and was operational in 19½ hours from the time the Joint Alert Order was issued.

The circumstances that required the deployment of American forces in Operations Just Cause and Desert Storm are clearly not aberrations. They are an unfortunate by-product of the transition to the post-Cold War era. While we may no longer give credence to the old Mao Tse-tung axiom that "power flows from the barrel of a gun," it is obviously still an operative rule elsewhere in the world.

In such an environment, the Army must remain prepared to advance and defend U.S. national interests worldwide. Army forces must be kept trained and ready for conflicts, crises, contingencies, and peacetime support requirements that may develop in other parts of the world. With over seven divisions employed in Operation Desert Storm, the Army is stretched to meet the needs of a global superpower. Nevertheless, we have maintained the capabilities of our forward-deployed forces in Europe and the Pacific, and of the remainder of the CONUS-base to perform normal peacetime engagement missions, to render support to civil authorities when necessary, and to provide combat ready forces elsewhere should the circumstances warrant. As we have seen with the deployment of VII Corps from Europe, all of our forward-deployed forces must maintain the capability to deploy to crisis areas worldwide on short notice.

With the value of maintaining trained and ready forces so fresh in our minds, I sincerely hope that we have learned our lessons from past post-war demobilizations. Our history is replete with examples of debilitating draw downs following major conflicts leading to poor performance by our military in the initial stages of the next crisis. We must not allow our trained and ready forces to be ravaged by the turbulence that will result from an unnecessarily hasty draw down following Operation Desert Storm. The stakes are too high.

— Shaping a Smaller Total Force

While supporting Operation Desert Storm and sustaining our readiness worldwide, we also must continue our plans to reshape the Army for the future. We remain committed to a comprehensive plan for shaping the Army into a smaller, capable Total Force and to our vision for the future—an Army trained and ready to defend vital U.S. interests wherever they might be threatened.

Our original plan, as outlined in my testimony last year, has proven remarkably resilient. You will remember that we began to develop our vision for the future Army in 1988 to provide the framework within which the Army could efficiently adapt to change in the international security and domestic fiscal environments while minimizing risks. We based this plan on careful assessments of the future capabilities the Army would require to fulfill our strategic roles in support of the national military strategy, the threats the Nation was likely to face through the end of the decade, and the lessons learned from demobilizations following previous twentieth century conflicts.

The essence of our plan was to significantly reduce the size of the Army and to limit our near-term modernization to only what was unquestionably essential in order to maintain the quality, readiness, and warfighting capabilities of the Total Army both during the transition to a smaller force and in the future. The plan was based on the uncompromising adherence to our six fundamental imperatives that guide the Army today and serve as a beacon for the future to maintain a quality force; maintain solid warfighting doctrine; maintain the appropriate mix of armored, light, and special operations forces required by national strategy; conduct tough, realistic training; continue modernization to improve warfighting capabilities; and develop competent, confident leaders. It was also based on maintaining a controlled and rational builddown process that would minimize the turbulence so detrimental to readiness and enable us to limit the impacts of involuntary release on our soldiers, civilians, and their families.

Further, it was based on the belief that all near-term actions to reshape the force had to be taken with our focus clearly fixed on the future. The victorious Army that executed Operation Desert Storm is the result of past policy decisions, investments, and an abiding commitment to fielding trained and ready forces. Our quality, volunteer soldiers are manning weapon systems developed, in some cases, over the past two decades. They are being led by leaders whose skills have been honed by training and leader development programs that last throughout an entire career. These leaders have remained in the Army not only because of their commitment to the Nation, but also because of the challenging career opportunities and the quality of life that the Nation has provided them. It has taken more than a decade to build the Army that we have today. We cannot expect to quickly rebuild the best Army in the world if we squander its quality, readiness, and future potential through precipitous reductions in force structure and personnel. In making near-term decisions then, we must ensure that we continue to build for the uncertain and unpredictable future.

Finally, we concluded that the evolving international environment would require an Army with three fundamental qualities: tomorrow's Army must be versatile, deployable, and lethal. These characteristics, along with the requirement to expand the force as a hedge against the uncertain future, continue to form the basis of our efforts to reshape the Army.

— A Versatile Army

In view of the rapidly changing international environment, the precise time, location, and nature of threats to U.S. vital interests will always be uncertain. The Army must be able to counter a wide array of potential and unpredictable threats with a relatively small force. Therefore, a highly capable, versatile Army able to meet U.S. strategic requirements for worldwide power projection and forward presence is the most effective solution to our Nation's requirements for land forces. The ability to tailor force packages for specific missions and to project the necessary elements of these forces without delays for retraining or mobilization will be essential. Versatility will require the right proportions of Active and Reserve components, the correct mix of forces (armored, light, and special operations), adequate sustainment stocks, and, above all, the ability to recruit and retain quality soldiers and leaders that are the foundation of our quality force.

Versatility also demands intensive training and frequent exercises. For the Army of the future, training programs and worldwide deployment exercises must provide leaders and soldiers the opportunity to tailor force elements, to deploy within anticipated contingency warning times, and to sustain forces in austere environments. Therefore, as I discussed, the Army plans to reconfigure the Active forces designed for crisis response and other immediate requirements worldwide. These plans envision a contingency force that can call on two fully structured Active component armored divisions, airborne, air assault, and light divisions, and special operations forces, as well as expanded Active component combat support and combat service support. This configuration will enhance the Army's versatility by increasing our ability to rapidly tailor lethal force packages on short notice to meet force projection requirements worldwide.

Versatility also will be essential in enabling the Army to meet other challenges. Adaptive and responsive Army civilians, soldiers, units, and leaders will be crucial as the Army continues to support national efforts to combat drug trafficking and terrorist organizations, to assist civil authorities in disaster relief and during other unforeseen emergencies, and to carry out security assistance efforts.

As the Army gets smaller, the quality of our people—soldiers and civilians—will determine the versatility of the Army more than any other characteristic. With a volunteer force, the Army must continue to provide incentives to attract and retain the highest caliber men and women. This means that the Army will have to provide not only adequate compensation but also living and working environments equal to those of the society our soldiers are sworn to defend. Furnishing such a quality of life for our soldiers and their families is a prerequisite for maintaining a quality force.

— A Deployable Army

The nature of U.S. interests around the world, our coalition-based strategy, the uncertainties of the international environment, and the planned reduction in our forward-deployed forces all require that U.S. forces be globally deployable, often with little or no warning, from the United States or from forward bases. Recent events in Panama and Kuwait make it abundantly clear that what I stated last year is even more true now: "Rapid deployment will become even more important in the future."

The United States also will have to maintain the ability to conduct an opposed entry into combat in defense of vital U.S. interests anywhere. In many contingencies, a forcible entry will only be possible, or will best be achieved, by simultaneous airborne assaults on a number of objectives, as we saw in Panama. Army airborne and Ranger forces are uniquely capable of performing this function. They will remain a key element in the Army of the future.

As we have demonstrated in Operation Desert Storm, Army forces today are trained and ready to deploy rapidly to meet requirements for armored, light, and special operations forces. Yet even the most deployable and combat-ready land force cannot be employed without adequate airlift, sealift, and pre-positioned stocks. The United States cannot afford to risk the effectiveness and credibility of its overall defense strategy by failing to develop and field adequate worldwide lift assets. Airlift and sealift currently available were severely taxed in the early phases of Operation Desert Storm. We had to rely to a significant degree on foreign vessels. U.S. worldwide lift capabilities must be reviewed in the immediate years ahead. A smaller, predominantly CONUS-based Army will be even more reliant on airlift and sealift for rapid movement to trouble spots in sufficient strength and with adequate sustainment to deter threats or to quickly terminate conflicts. The Army continues to believe that the early fielding of an adequate number of C-17 aircraft is a matter of the highest national priority. Moreover, the United States should develop and maintain sufficient fast sealift capacity to support contingency power projection of at least two armored divisions simultaneously, anywhere in the world in about 30 days.

Not only must the United States expand worldwide lift, it must also move ahead with other initiatives that enhance our ability to act in crises and other immediate circumstances through the deployment of powerful conventional forces. We must design our forces so that they can be put together in packages that are tailored for rapid movement. We must examine military access agreements that allow us to project forces during pre-crisis situations. We must design our equipment stressing mobility while not sacrificing combat power, and we must look at ways to preposition supplies and equipment to enhance the infrastructure in regions where we see the greatest risk. The lessons of Operation Desert Storm underscore this point; the ability to project significant combat power was greatly facilitated by a decade of work done to develop the infrastructure in Saudi Arabia.

— A Lethal Army

Lethality is the assured capability to defeat an opponent, winning as quickly as possible to preserve the lives of our soldiers and to limit collateral damage and noncombatant casualties. Assuring the lethality of Army forces against increasingly modernized opponents demands a disciplined, continuous modernization effort. This means maintaining the capability to swiftly counter the armored forces of potential adversaries after deploying to austere environments while at the same time fielding forces that can defeat less sophisticated threats around the world. There should be no question as to the value of maintaining modernized, lethal forces.

Concepts and doctrine will continue to guide the Army's efforts to develop and field combat-ready forces. For the near term, AirLand Battle doctrine provides this foundation. Projecting ahead, the Army has launched the evolutionary AirLand Battle-Future concept that is designed to update all our warfighting doctrine for the early 21st century. The Army also will continue to participate in the development of joint and combined doctrine.

Based on this doctrine, Army modernization will continue to capitalize on U.S. advantages and strengths—particularly the qualities of our soldiers, leaders, and technology—and exploit vulnerabilities and weaknesses in potential adversaries. As future budgets will be constrained, the Army will assign appropriate priorities and levels of effort to all aspects of modernization in order to field a force for the future that can win and survive against any potential adversary. We believe that we can make the best use of our resources by investing in our technology base in order to identify promising new technologies while avoiding mortgaging our future for useful but non-critical near-term capabilities. To be sure, we will continue to field systems to overcome critical near-term deficiencies. The Air Defense Antitank System (ADATS) and our anti-armor modernization programs are examples of systems designed to fill current critical battlefield capability voids. For the most part, however, the Army will forgo near-term modernization while continuing with essential long-term modernization efforts. The Light Helicopter, Armored Systems Modernization, and our intelligence and early warning programs are examples of our investment in the future. In sum, high-technology research and development is, and will remain, a central feature of the Army's modernization strategy.

The lethality of the Army of the future will be determined, above all else, by the actual combat readiness of the force. Training will continue to be the cornerstone of Army readiness. Combat Training Centers will remain the key to developing the maximum lethality of Army units. These centers not only hone combat skills, they also enable us to apply lessons learned, such as those being derived from Operation Desert Storm; to assess the validity of the Army's combat doctrine; and to develop officer and non-commissioned officer leaders. Indeed, the Army in the desert today is the product of some of the most rigorous peacetime training ever conducted. The Army will continue to provide tough, realistic training to the highest standards so that soldiers, units, and leaders have the best possible chance of quickly accomplishing their missions and surviving should they be committed to combat.

Quality Army soldiers, structured in an appropriate mix of armored, light, and special operations forces; trained to a razors edge; equipped with modern systems; guided by a solid warfighting doctrine; and led by competent and confident leaders will provide the Nation the lethal forces that it requires on the battlefields of today and tomorrow.

— An Expansible Army

A smaller Army must also be expansible—able to grow quickly as a hedge against future uncertainties. The dynamics of the international situation are such that current plans to reduce the size of the Army are not without substantial risk. Some of this risk will be reduced by maintaining quality and readiness in the Total Force and some by retaining the capability to rapidly expand the force. The force generation model that I discussed earlier is the cornerstone of an expansible Army. It is the means by which the Army structures the force to meet the requirements of the national military strategy.

As we have seen in Operation Desert Storm, smaller U.S. land forces may often be outnumbered by the land forces of their opponents. Given the planned size of the future Army and the unpredictability of the international environment, the United States must maintain the capability to regenerate forces to sustain and reinforce extended contingency operations, to hedge against a second simultaneous contingency, or to confront a resurgent Soviet Union or other unexpected large-scale threats to U.S. security. The Army will therefore continue to rely extensively on the Reserve components for combat support and combat service support augmentation and to provide reinforcing combat forces. Their timely activation for crises beyond small-scale contingencies will be essential to the successful attainment of U.S. objectives.

The ability to successfully expand Army forces rests on detailed mobilization planning, realistic call-up authority and planning assumptions, periodic testing of the mobilization apparatus, and the foresight and discipline to adequately resource programs and units required on mobilization. The Army must retain the capability to expand the force both during its transition to a smaller force and in the future.

THE ARMY OF 1997

At this time last year, we planned to reduce the size of the Army from a five-corps, 28-division force to a four-corps, 23-division force by the mid-1990s. The accelerated collapse of the Warsaw Pact and the requirement to meet the targets of last year's budget agreement necessitated further reductions. Our current plans envision a four-corps, 20-division Army by the mid-1990s. We strongly believe that this is the irreducible minimum force required for the Army to meet the Nation's future needs for a sustained land combat capability. It is the force that we must have, as the Chairman of the Joint Chiefs of Staff mentioned in his recent testimony before the committee, to deal with the emerging and enduring realities that our Nation faces in the future.

The future Army will be largely CONUS-based. Forward presence will be maintained by forward-deployments at levels sufficient to maintain credible deterrence and to demonstrate unambiguous commitment and resolve to allies, friends, and adversaries worldwide. It will be supplemented by the periodic deployments of forces from the United States or from forward locations. The Army in CONUS will consist of a contingency force that is rapidly tailorable for crisis response and other immediate force projection requirements worldwide, an early reinforcing force of Active divisions rounded out by Army National Guard brigades, a follow-on reinforcing force of Army National Guard divisions, cadre divisions, and the requisite general support forces. When reductions to these levels are completed, the Nation will be at the limits of acceptable risk with regard to its land forces, even with the continued non-confrontational posture of the Soviet Union.

The Army's budget for fiscal years 1992 and 1993 represents the continuation of the Army's efforts to reshape the force. As submitted, it is based on the Army's attaining designated fiscal year 1991 end-strength reductions by the end of the fiscal year. It seems clear, however, that these plans must be adjusted after U.S. and coalition objectives in Operation Desert Storm have been achieved. While the outcome of Operation Desert Storm is not in question, its duration and impact on the Army are. Hence, while the Army remains committed to the prudent continuation of our plans for reshaping the force, we will complete the refinement of our plans for the future now that the combat phase of Operation Desert Storm has concluded.

CONCLUDING STATEMENT

Mr. Chairman, in closing I want to thank the members of the committee whom I have worked with over the past 4 years for their support. It has been an honor and a privilege to serve with you in shaping an Army of which we can be justifiably proud.

At the same time, it has not been easy beginning the build down of the finest peacetime Army in the history of the Nation. Yet I could do this with absolute conviction because I firmly believe that the United States will never be properly served by a large, poorly trained, undermanned, and ill-equipped Army. We have made a very conscious choice to reduce the size of the Army in order to preserve the quality, the readiness, and the warfighting capabilities of the force for the present and the future. In my judgment, quality and readiness are essential—not optional. I cannot overstate the importance of this. As I said last year: "There is no substitute for quality, and there can be no retreat from readiness!"

We have, however, reached the lowest limits possible in size. The Army of the mid-1990s will be a perilously small land force for a Nation with the United States' superpower responsibilities. As we continue to shape the force for the future, we must keep this in mind. It will then be essential to minimize the risks inherent in a smaller force by limiting the turbulence created by rapid force reductions and by maintaining the quality and readiness of the force. The Army's plans for the future have been structured to accomplish this.

I cannot overemphasize the need for a prudent and managed reconstitution of the Army at the conclusion of Operation Desert Storm and the gradual resumption of our planned force reductions. It is essential that we address the realities of near-term fiscal requirements with a view toward the future. The decisions you will make concerning the reconstitution and this budget will shape the direction of the Army in the decade of the 1990s and beyond. I fervently hope that our successors are not faced with the need to confront a future "Saddam Hussein." But, more than that, I hope that if we do, both the Army and the Nation are prepared.

Finally, as Army Chief of Staff, my greatest reward has been the opportunity to serve with the magnificent young men and women of America's Army, almost 300,000 of whom are now serving in the Persian Gulf. The all-volunteer Total Force has clearly been a resounding success, and I am proud to have been a part of it. While I am enormously gratified at the performance of our Army in Operation Desert Storm and the small number of casualties that have resulted, I mourn the sacrifice of the brave men and women who have given their lives for our country. Mr. Chairman, thank you and the committee for your time and for your support of the Army. I will be pleased to take your questions.

[The United States Army Posture Statement, Fiscal Years 1992-1993, "Trained and Ready," is retained in committee files.]

Chairman NUNN. Thank you very much, General. Admiral, we will get to you next, but we have a vote now. I know all of us want to hear you and some others have probably been waiting and want to come back. So I think at this point in time we will take a brief recess.

Senator WARNER. Mr. Chairman, allow me just to say a word as General Vuono concludes.

Chairman NUNN. Certainly.

Senator WARNER. In visitations to the Gulf here recently, I have heard a number of commanders single you out personally for the vision that you had years ago with respect to these tactics employed in the Gulf—a vision that you instilled in the Army to move toward the very tactics that were employed by General Schwarzkopf and other field commanders. I am just repeating what others told me. General, so you deserve, I think, some special recognition.

General VUONO. Thank you.

Chairman NUNN. Thank you, General Vuono. We will be back here as close to 2:30 as we can.

[Recess.]

Chairman NUNN. Admiral, we will start back up with you.

STATEMENT OF ADM. FRANK B. KELSO II, USN, CHIEF OF NAVAL OPERATIONS

Admiral KELSO. Thank you, Mr. Chairman. I would like to express my appreciation for the opportunity to appear before this distinguished committee today. I appreciate very much your kind words of compliment for our young men and women in uniform. I share your view; they are the finest young men and women that I have ever seen in my career and I think they performed splendidly in Desert Shield and Desert Storm.

I would ask, sir, that I make a short statement and my prepared statement be submitted for the record.

Chairman NUNN. Fine. Without objection, it will be. Any of the material any of you have with you will be put in the record that you do not care to give now.

Admiral KELSO. I believe each of you can take great pride in your support for our Navy and its performance in Desert Shield and Desert Storm. Many of the decisions which you participated in and made and supported in years past I believe were proven in this crisis. Certainly our carrier battle groups being forward-deployed, being in a position to reach Southwest Asia within about a week of the start of this conflict on August 2, was very fortuitous.

The maritime prepositioning ships which we bought in the 1980s allowed us to bring sustainability to our marines rapidly. The afloat prepositioning ships which we had in Diego Garcia were there shortly to provide sustaining ammunition and support for ground and air forces. The maritime superiority we bought and paid for in our Navy guaranteed free access to the slots, to the vital ports in the Red Sea and Persian Gulf, and we did not worry much about attrition. Maritime superiority additionally provided the maritime interdiction forces which essentially eliminated Iraqi seaborne trade shortly after the United Nations placed the embargo. Our distribution of firepower to many platforms with cruise missiles was proven effective.

Carrier aviation once again demonstrated the Navy's ability to project power ashore from the sea and to add to and complement the superb work of our Air Force. Air coordination and safety in Desert Storm exceeded my expectations and was remarkable. My assessment is your Navy has amply demonstrated its capability to establish sea control and project power halfway around the world.

During this, though, we did other things. We continued to support drug interdiction operations and today there are 13 ships and various aircraft devoted to this mission. We continued amphibious deployments to the Mediterranean. We continued to exercise with our allies in the Pacific, and many of them were worried whether our attention was all to Southwest Asia and we had forgotten them. We carried on two operations during this period that were of significance. We spent over 7 months with Navy and Marine forces off of Liberia removing innocent citizens in that holocaust to bring them to safety. We went to Somalia and removed the Embassy personnel from Mogadishu, along with the Russian Ambassador.

But the most amazing part of all this performance has been the superb motivation and quality training demonstrated by the Active and Reserve officers, sailors, and marines. The equipment has worked well, but the young men and women have made it possible. Their performance in this crisis from a jump start is ample proof that the investment in maintenance, spare parts, training exercises, flying hours, steaming hours, and their quality of life was well worth the cost. Realistic training is not cheap until you start measuring it in reduced lives lost in combat. In that environment, it is a real bargain. The ultimate measure in quality of life is for them to come home.

Sir, when I was appointed CNO last July, I recognized that the period I would serve would be one of historic change and uncertainty. I can promise you these expectations have been realized. We are adjusting to the changes and are working hard to maintain the superb Navy we have today, as well as define a vision for tomorrow's Navy. As I look to the future, my vision is not as clear as I would like. But it appears that the political shape of our world is changed and the threat of global confrontation has diminished. This year's budget continues the downward adjustment in the size of the Navy which reflects this change.

We have additionally recognized this change in our view of how the Navy is likely to be used in the years ahead. We have put on shelf the containment strategy that has been applicable for the past 40 years. The Navy will continue to provide forward presence in many regions of the world. We will be in place to provide a stabilizing force on a day-by-day basis and will be ready to serve to support U.S. interests with additional forces when required.

I expect since we will be smaller there will be fewer ships deployed, but those that are deployed will exercise greater mobility and flexibility in meeting our Nation's interests. We approach a Navy of around 450 ships in 1995. I believe this force level will likely support U.S. vital interests if—and I underscore "if"—the improved world situation witnessed in the past 2 years continues. I hope that the trend of the past 2 years continues. I hope and pray this trend will be with us for a long time. But, as Desert Shield and Desert Storm have clearly shown, a thaw in the Cold War does not guarantee political or economic stability.

Substantial U.S. Navy forces are likely to be needed for as far as I can see to provide regional presence and a stabilizing influence and to serve to deter conflict or participate in regional crisis. We will also need to keep an eye over our shoulder to ensure Soviet intentions remain cooperative.

I recommend that we watch very carefully in the months and years ahead to ensure we are traveling the right path. I look to this future with great hope for our children and a more peaceful world, but in my business, when it takes better than 10 years to design and build a ship, we had better make the right choices. To be wrong or hasty entails great risk for our future.

Sir, it is a great pleasure to be before this committee. I look forward to serving you in the days and years ahead. Thank you, sir.

[The prepared statement of Admiral Kelso follows:]

PREPARED STATEMENT BY ADM. F.B. KELSO II, CHIEF OF NAVAL OPERATIONS

The past year has witnessed a fundamental shift in the post-World War II political and military balance. Changes in the political and security environment which were only dimly evident a year ago have come more sharply into focus in the last few months. The close of the Cold War, the unification of Germany, and our evolving relationship with the Soviet Union and its former allies in Eastern Europe have resulted in growing mutual interests with these nations on a broad range of issues. These changes have been highlighted by events in Southwest Asia, where the Soviet Union and many East European states now support the position and actions of the international coalition and the U.N. resolutions concerning Iraq.

Through perseverance and sacrifice, the United States and its allies have begun to realize the fundamental goals for Eastern Europe which we pursued so steadfastly throughout the Cold War—freedom and national self-determination. Our rapid response to aggression in Kuwait, with a major transfer of U.S. military might into the Persian Gulf region, demonstrates our continuing commitment to these principles. Unfortunately, the necessity for U.S. military operations in Panama, Liberia, Somalia, and the Persian Gulf in the past year has also proven that the end of the Cold War has not eliminated instability and the need for U.S. involvement.

Clearly, we live in a time that is fraught with both opportunity and danger. Our response to these challenges will determine, in large measure, our status as a world leader in the 21st century. It is now time to reexamine many of our earlier ground rules and assumptions. Some will remain valid, others will need to be reshaped to respond to new requirements. Elements of naval force structure, strategy, tactics, and operating patterns based primarily on the concept of global war with the Soviet Union will have to be focused on maintaining stability in many regions with economic and politically uncertain futures. One thing is clear—we must seize the initiative in responding to this new environment.

THE WINDS OF CHANGE

Today, the threat from the Soviet Union has diminished significantly. Beset by a wide range of fundamental economic and political problems, the Soviets have eased their iron grip on Eastern Europe and haltingly begun the first tentative steps toward democratization and a market economy. The military consequences are significant. It is now very unlikely that the Soviet Union could launch a conventional attack on the United States or its allies without an extensive period of forewarning. However, the Soviet Union's nuclear arsenal makes it the only nation capable of threatening our national existence. Both of these factors must be accounted for in our planning for the future.

In the past, we have argued strongly that we must base our plans and force structure on the capabilities of our potential foes, not on their intentions. Certainly, given the enormous amount of time and resources necessary to develop and field modern naval forces, this has been a prudent approach. Good intentions can change very quickly; capabilities do not. While we recognize the importance of the changes in Eastern Europe and hope for continued improvement in U.S.-Soviet relations, recent events in the Baltic republics and unresolved arms control issues make it prudent that we continue to hedge against possible Soviet retrenchment.

There are, moreover, other factors we must consider when developing our strategy to cope with a changing world. A growing number of countries are acquiring increasingly sophisticated military capabilities, including weapons of mass destruction and the means to employ them over great distances. We are likely to see increasing limitations on U.S. access to foreign bases. Military operations will probably include forces from our traditional allies and from nations with whom we share no alliance, but with whom we have common interests. And, finally, we must expect that fiscal pressures at home will affect the level of future defense spending.

Despite dramatic shifts in the geopolitical environment, the United States remains the world's preeminent military and economic power. However, this fact alone has not been sufficient to deter conflict. The world has not yet progressed to the point where we can count on the good intentions of individual countries and leaders to maintain peace and prosperity for all. Nor can we rely solely on the moral suasion of international law to limit aggression and illegal action. We must accept that, in a world marked by conflicting political, social, and economic systems, there will always be those who consider their interests at odds with our own. Iraq justified its invasion of Kuwait in terms of longstanding territorial claims. Throughout the world today there are many similar irredentist claims, territorial disputes, and social and religious conflicts which have the potential to erupt and threaten important U.S. interests.

STRATEGIC CONSTANTS

Regardless of the uncertainty surrounding the future, it is clear that America's fundamental goals and interests remain unchanged: to defend the United States, its people, and their interests; to contribute to a global environment of improving economic conditions; to promote political stability; and to foster individual freedom and self-determination.

Geography is another constant—the United States will remain a maritime nation, dependent upon the seas for commerce, defense, and links to its overseas allies. The Navy will, therefore, retain its traditional importance as a primary means of protecting and projecting U.S. interests around the globe.

Today, the U.S. Navy has the forces to support national policy in a superpower confrontation as well as the capability to respond immediately to even the most distant threat to regional stability. These forces represent the culmination of two decades of planning and investment and will influence strongly the structure of the Navy for the next 20 years. Our Aegis cruisers and destroyers, Trident ballistic missile submarines, modern attack submarines, aircraft carriers, and weapons such as the Tomahawk cruise missile are part of a Navy that stands at the leading edge of technology.

Technological supremacy alone, however, does not ensure security. The strength of the Navy throughout its history has been the dedication, professionalism, and quality of our people. Our requirement to recruit, train, and retain the best of our Nation's youth will not change as we look to the challenges of the next decade.

CHANGING U.S. STRATEGIES

In response to these fundamental shifts in the national security environment, the United States and the Navy have begun to adapt their strategies to this new set of circumstances.

A New Defense Policy

In his address at Aspen, Colorado on August 2, 1990, the President stated that future U.S. defense policy will be based on four major elements: Deterrence, Forward Presence, Crisis Response, and Force Reconstitution. Maritime superiority over any potential adversary remains an indispensable underpinning for each of these elements of national security.

Deterrence, both nuclear and conventional, costs less than any level of conflict, and will remain the cornerstone of U.S. defense policy. Nuclear deterrence will be required as long as any country possesses the capability to strike the United States or endanger U.S. forces abroad with nuclear weapons.

The ability to maintain capable naval forces in potential crisis areas throughout the world is essential to U.S. security. In addition to helping deter local conflict, forward deployed forces demonstrate commitment and support for our friends without having to rely on increasingly scarce overseas bases. Our ability to affect events and deter conflict is greatly enhanced by the presence of forces at the scene of the potential disturbance. Should deterrence fail, these forces enable us to respond rapidly to contain a crisis.

When crises do occur, naval forces can be positioned quickly to signal intent and support regional allies. Powerful and self-contained, they can project power ashore and influence events anywhere in the world. Just in the past year, U.S. naval forces have reacted on short notice to protect American lives and support U.S. interests in Central America, Africa, and the Persian Gulf. In Operation Sharp Edge, naval forces remained off the coast of Liberia for 2 months before being called upon to evacuate over 350 Americans and 1,500 citizens of other countries. In Operation Eastern Exit, forces were diverted from duties in the North Arabian Sea to rescue 260 U.S. and foreign diplomats from Somalia. And in Operation Desert Shield naval forces have provided forward presence, enforced U.N. economic sanctions, and expanded significantly the combat capabilities available to the theater commander.

An uncertain future also requires that we be able to reconstitute forces if the global situation changes once again. Fortunately, the decreased likelihood of a major conflict also provides increased strategic warning, thereby allowing us to place greater reliance upon forces maintained at lower readiness levels. For example, we plan to place 25 percent of our surface ASW forces, designed primarily for convoy escort missions, in an inactive reserve status, ready to be reactivated within 180 days.

Under these guidelines from the President, we have focused our long range force structure planning on a smaller, but still potent, Navy of approximately 450 ships.

This number represents a capability to respond to regional threats against U.S. interests and a hedge against a resurgent global threat.

Joint and Combined Operations

As the size of U.S. military forces declines, greater emphasis will be placed on integrating the complementary capabilities of each of our military services to meet specific situations. Crisis response operations to protect worldwide U.S. interests will increasingly be joint in nature. The unique missions and functional capabilities of the services are intended to be complementary, enabling, and enhancing. Properly employed, joint forces provide us with the means to generate the greatest total combat capability in the shortest time. Forward deployed naval forces, for example, can arrive on scene quickly and conduct sustained operations. They provide for initial defense and play an important enabling role, covering the introduction of heavy ground and air forces. If a lodgment ashore is not available, Navy and Marine forces have the ability to seize and hold territory, opening the way for follow-on forces.

In the future, we will also place greater emphasis on the potential contributions of other nations. Collective security remains central to U.S. strategy. In the past, our primary security ties and operations centered on countries with whom we maintained formal alliances. Such alliances remain a strategic necessity, but we also may see other forms of international security cooperation. The coalition of states allied in support of Operation Desert Storm may be more representative of future security arrangements that will complement longstanding treaties such as NATO. To support growing international cooperation, we must increase our training with other navies—both to facilitate cooperation and coordination and to maintain our own expertise in likely operating environments.

Employing Naval Forces

During the coming decade, deployed naval forces will still perform their traditional missions of deterrence, routine presence, and crisis response. Their ability to support U.S. interests, whether through subtle diplomacy or military action, makes them particularly relevant in a world where the maintenance of regional stability is a primary concern. However, they will increasingly be called upon to perform such missions as humanitarian assistance, disaster relief, counternarcotics operations, and peacekeeping.

It will not be easy to determine just how much presence may be required in a given region at a given time. It is clear, however, that we can no longer plan our deployments on traditional assumptions of Cold War confrontation. Reduced U.S.-Soviet tensions will allow greater freedom in deployment patterns and the shifting of forces among theaters in response to world events.

In the future, meeting presence requirements with fewer assets will call for full exploitation of the mobility and flexibility of our naval forces. That means changing the length and location of deployments, as well as tailoring the composition of carrier battle groups, amphibious forces, and surface action groups to specific circumstances.

Whatever the nature of our changing security environment, national decision makers will continue to rely heavily on naval forces. Because of their proximity, sustainability, staying power, independence from bases ashore, and robust combat capabilities, naval forces will be among the first called in a crisis. However, lower force levels and alternative deployment patterns will require that these forces begin moving toward potential trouble spots earlier.

Regional Operations

Desert Shield and Desert Storm are unique operations in many respects and do not represent the only scenarios we could expect. For example, we were fortunate to be able to use a very highly developed port and airfield infrastructure in Saudi Arabia, which would probably not be available in other regional scenarios. We must ensure that our naval forces are flexible enough to meet the demands of an uncertain future. Operations to support regional stability will place greater emphasis on power projection carrier air strikes, amphibious operations, and cruise missiles. At the same time, local sea control will remain a prerequisite to projecting power ashore.

Control of the air, sea, and undersea environments essential to successful military operations on land will take on a different character but certainly will be as complex as maintaining control in an open-ocean environment. Sensors and communications systems designed for blue-water operations may not work as well in confined areas, shallow seas, or over land. The threats posed by small coastal patrol boats, shore-launched cruise missiles, and shallow-water mines will present new challenges to our operators. Quick-reaction combat capabilities and the ability to maintain an accurate and timely tactical picture will be critical for operational success in these littoral areas.

Technology

Technology is changing the face of modern warfare, and the U.S. Navy is at the leading edge of this movement. Since ships and aircraft often have lifetimes of over 30 years, adapting the best of new technologies to proven concepts and platforms holds the most promise for meeting the challenges of the next decade. Developments in precision guidance, satellite navigation, cruise missiles, advanced radars, stealth technology, and worldwide communications have already been incorporated into the Navy's force structure and tactics.

We must ensure that, as technology evolves, we use it to our best advantage. The technological gap between our forces and those of our potential adversaries almost certainly will narrow, but we must never lose our comparative edge. Low observables, fiber optics, counter-stealth, improved weapon seekers, unmanned vehicles, netted high-speed computers, and advanced command, control and communications systems are some of the promising areas we are exploring.

OPERATIONS DESERT SHIELD AND DESERT STORM

The current conflict in the Persian Gulf region is a particularly illuminating example of the Navy's ability to respond to crisis. Since the outset of Operation Desert Shield, naval forces in the Persian Gulf region have been a major instrument for bringing international pressure to bear on Iraq. The role of enforcing U.N. economic sanctions has rested primarily upon U.S. and allied naval units, which have challenged over 7,100 ships and boarded over 860. This interdiction operation has eliminated seaborne trade to and from Iraq. When the decision was made to move a deterrent force to support Saudi Arabia and Kuwait, local sea control—an indispensable prerequisite for power projection—was established quickly by two forward deployed carrier battle groups. A review of the joint response in the first month after the invasion illustrates the contributions of naval forces.

August 2—Iraq invades Kuwait. Eight forward deployed U.S. Navy ships of the Middle East Force—including one guided missile cruiser, one amphibious support ship, one Tomahawk-armed destroyer, four guided missile frigates and one frigate—are on station from the opening of the operation.

August 7—First Maritime Prepositioning Squadron (MPS) ships carrying combat equipment and stores for a Marine Expeditionary Brigade depart Diego Garcia for the Persian Gulf. Three Fast Sealift Ships are activated and ordered to report to CONUS ports of embarkation to pick up designated Army units.

August 8—Five additional Fast Sealift Ships are activated and directed to U.S. ports of embarkation. Two carrier battle groups arrive on station within striking range of Iraq: one in the North Arabian Sea and the other in the Mediterranean.

August 9—Afloat Prepositioning (PREPO) ships carrying Army and Air Force ammunition and supplies get under way from Diego Garcia and the Mediterranean.

August 15—First three MPS ships arrive in the Persian Gulf.

August 17—First PREPO ships arrive in Persian Gulf ports.

August 20—Marine Corps combat units, flown into Saudi Arabia by the Military Airlift Command, marry up with heavy equipment and supplies brought in by MPS ships.

August 23—Two additional carrier battle groups and a battleship arrive on station.

August 27—Fast Sealift Ships begin to arrive, providing equipment for major elements of an Army mechanized division and an infantry brigade.

September 5—A U.S. Navy Amphibious Ready Group arrives in the area with its embarked Marine Expeditionary Unit.

While it is still too early to reach any final conclusions about the performance of naval forces in Operation Desert Storm, several preliminary observations can be made. The ability of the Navy to augment the eight ships of the Middle East Force with two carrier battle groups within days of the invasion of Kuwait validates our strategy of forward deployment. This presence guaranteed free use of the seas for the vast amount of men and material which has followed. In addition, the Maritime Prepositioning Squadron ships in the region enabled the Marine Corps to put a significant deterrent force on the ground in Saudi Arabia within 2 weeks of the Iraqi invasion. In short, U.S. naval forces helped provide for the introduction of airborne forces, tactical air forces, and heavy ground units to the region.

Once the conflict began, the ability of naval forces to integrate with other services and allies to project power and to affect events ashore added a critical dimension to the coalition effort. In particular, the ability of U.S. carrier aircraft to assist in the establishment of air superiority and to bring accurate and lethal firepower to bear throughout the theater of operations has been a key part of the coalition response to Iraqi aggression and has provided a significant share of the coalition's strike capability to date. Additionally, the accuracy and range of the Navy's Tomahawk cruise missiles have added a new dimension to naval warfare and have enabled ships and submarines to complement effectively our strike aircraft.

Throughout the entire operation, it has been clear that the motivation, training, and quality of our people provided us a critical edge. More than any weapon system, the outstanding performance of our men and women has been *the* success story of Operation Desert Storm. From time to time, we discuss whether the emphasis we place on readiness and training can be reduced in order to save funds. If there has ever been a clearer justification of this commitment to readiness than our success in Operation Desert Storm—the effective interdiction of Iraq, the rapid attainment of air supremacy, the close coordination of Tomahawk strikes, and the low attrition of our aircraft—I am not aware of it. I am absolutely convinced that the dollars we invest in realistic training, especially for steaming days and flying hours, reaps enormous benefits in lives, material, and overall combat capability. The current conflict in Southwest Asia is simply the latest example which proves this point.

WHAT IS THE WAY AHEAD?

To maintain our hard-earned position as the most modern and capable naval force in the world today, we must meet the following near-term requirements:

— We must ensure that the forces we plan for the next decade are affordable in a era of diminishing defense funding.

— We must ensure that the forces which will replace our present ships and aircraft are capable of performing required missions.

— We must maintain an adequate industrial base to ensure efficient procurement and maintenance of the next generation of platforms and systems, and adequate shore infrastructure for surge capacity in times of conflict.

— We must ensure that we keep our technology advantage.

— And we must maintain the quality of life and high morale of our people.

These are formidable challenges. Nonetheless, the Department of the Navy is pursuing a number of specific measures which will provide us with a clearer picture of the way ahead.

The fiscal realities of the 1990s have made the development and acquisition of affordable weapon systems and platforms an increasingly important factor in sustaining our maritime strength. We also are refocusing leadership and management efforts to help us reduce the costs of operating our forces. We have begun the implementation of Total Quality Leadership (TQL), an approach which is already widespread in many areas of the naval shore establishment and some areas of civilian industry, to improve our use of the contributions made by our intelligent and innovative people. We strive to improve the quality of life and quality of work throughout the Navy.

We must make these changes with a cautious eye toward the need to maintain overall quality in our investment in people and equipment. We can neither retain our people nor operate safely unless we maintain a continued commitment to quality in the work place, both at sea and ashore. Equally important is the need to train our people in realistic, challenging environments. We intend to do this by increasing our reliance upon simulators and shore-based trainers while continuing to support an acceptable level of training at sea and in the air. Our recent successes in Operations Desert Shield and Desert Storm are a direct result of the training we have provided our young men and women.

We must never forget that naval operations take place in an inherently dangerous environment. We are working hard to address the hazards associated with our profession. The number of naval personnel who died in operational accidents declined almost 30 percent from 1989 to 1990, while the fiscal year 1990 aviation accident rate of 1.96 per 100,000 flight hours was the lowest on record. Nevertheless, we will not be satisfied until our safety record is perfect.

KEY COMPONENTS OF MARITIME SUPERIORITY

To meet the demands of our national security strategy, we need naval forces that possess a wide range of capabilities. These must include: sea-based strategic forces for continued deterrence of nuclear attack; surge forces that can react rapidly to any crisis; forward-deployed expeditionary forces capable of going anywhere, with full logistic, medical, and repair support; and a sea-based maritime prepositioned force.

The Navy's ballistic missile submarines are an integral element of the U.S. nuclear triad. A force of 18 Trident submarines will provide a survivable, cost effective nuclear response capability well into the next century. Similarly, U.S. attack submarines provide both nuclear and conventional deterrence by countering sea-based platforms that might threaten the United States or its allies. We must continue to maintain our strong technological edge in the critical areas of ASW and submarine operations. This does not require a massive building program. Maintaining our current SSN force through its programmed service life, together with a construction program adequate to maintain our industrial base for building submarines, will meet this requirement in the short term.

The centerpiece of our balanced power projection forces remains the carrier battle group. Each battle group is composed of an aircraft carrier, surface combatants, and possibly one or more nuclear attack submarines. These forces are supported by combat logistic ships, land-based maritime patrol aircraft, and sophisticated space-based surveillance and communications systems. They can be ready on short notice to conduct full combat operations anywhere in the world. We will need a force of at least 12 carriers and about 150 surface combatants to meet future requirements for forward presence and to provide additional surge capability in a crisis. During the next several years, we will reduce our forces to these levels.

The growing threat posed by the spread of high technology weaponry means that we must rely even more heavily on our technological advantages. Today, our operational commanders have an extensive menu of both complex and traditional weapons from which to draw. As the overall number of Navy ships declines, we intend to offset some of the limitations of a smaller force structure by advances in weapons technology which will enable us to use an increased number of platforms as instruments of long range striking power. This distribution of firepower is best illustrated by the Navy's introduction of cruise missiles, which can be launched from a number of air, surface, and subsurface platforms.

Naval forces also have the capability to influence events ashore by employing the flexible assault capabilities of our amphibious forces, which are built around Marine Air Ground Task Forces (MAGTF). Each MAGTF, regardless of its size, is a task organized, self-sustaining, fully combat capable unit which may be deployed in amphibious ships or airlifted to rendezvous with prepositioned equipment, supplies, and ammunition.

In recent years, we have focused considerable effort on mine countermeasures. Our helicopter and surface mine countermeasures (MCM) forces have made great strides, but new mine technology is proliferating rapidly. We cannot ignore the potential threat a dedicated mining effort would pose to our operating forces and our critical sea lanes. A force of 14 modern surface mine countermeasures ships and planned mine hunting ships will be a vital part of America's balanced naval force for the next decade.

Sealift and afloat prepositioning of heavy combat equipment and supplies are absolutely vital for sustained power projection operations. Responding to the Iraqi invasion of Kuwait presented a particularly demanding challenge due to the lack of strategic warning, the immense distances involved, and the sheer size of the U.S. forces and material which had to be moved. Nonetheless, during the first 6 months of Operations Desert Shield and Desert Storm, U.S. strategic sealift, augmented by chartered commercial ships, moved over 2.1 million tons of combat equipment and supplies.

There is no single solution to the requirement for strategic lift. Airlift, prepositioning, rapid response sealift, reserve augmentation shipping, and the availability of ports and airfields at debarkation points are all elements of the entire picture. A congressionally mandated mobility study of airlift, sealift, prepositioning, and amphibious lift requirements is presently under way. In coordination with this effort, the Navy is developing options for additional roll-on/roll-off (RO-RO) capability and is also developing plans to acquire new construction and/or commercially available ships, pending the study's results.

In addition to highly capable Active forces, we will also need trained and qualified Reserve forces to buttress Active units in times of war or national emergency. Today, the value of a Ready Reserve component is being demonstrated dramatically in Operation Desert Storm. Navy Reserve personnel have responded superbly, and are integrated fully to support our forces in Southwest Asia.

MORE THAN NUMBERS

The smaller Navy described above reflects a 25 percent decrease from the 600-ship Navy that was identified during the 1980s as the minimum force needed to counter a growing Soviet capability. It also represents an 18 percent decrease in the size of the current U.S. Navy. The current evaluation of a diminished Soviet threat permits meeting America's requirement for maritime superiority with smaller naval forces.

This is not, however, a risk-free strategy. There should be no doubt that, if the continued decline in Navy funding, force structure, modernization, and personnel persists, we will reach a point where this Nation will no longer be capable of maintaining the maritime superiority so vital to the support of our global interests. In pursuing this path, we must evaluate carefully America's requirements for national defense and, in particular, for naval forces. From today's perspective, I must conclude that we should not drop below the 450 ship level we will reach in 1995. To do so would seriously jeopardize our ability to maintain maritime superiority.

With a smaller Navy force structure, we will find it increasingly difficult to maintain the wide balance of capabilities required to counter sudden, unexpected geopolitical challenges and newly emerging threats. Moreover, these forces will be unable to support a regional crisis or conflict for more than a few months without major departure from preferred rotation and deployment policies.

Our people remain the strong foundation upon which our maritime strength is built. We must continue to attract and retain the best of our Nation's youth. To do that we have to operate our force in a way that provides our sailors and marines a decent, realistic quality of life—beginning with stable sea and shore-rotation patterns. Current guidelines concerning the time sailors are away from home port must be followed, with only temporary disruptions for crises or national emergency, even while force structure shrinks.

There are, however, other issues that are just as important to our sailors. As we reduce the size of our Active forces, we must be careful not to draw down our personnel too quickly. Large involuntary releases hurt morale and will make it more difficult to recruit high quality personnel. Our people must receive sufficient basic and advanced training in a realistic environment to inspire confidence in both themselves and their shipmates. While serving their country, they deserve ships, submarines, and aircraft which are well-maintained and combat ready—with sufficient time and funds being allocated for periodic overhaul and maintenance.

CONSTANCY AND CHANGE

The prospect of a global war between NATO and the Warsaw Pact has diminished and the world is undergoing a period of rapid change. Although we do not yet know where these changes will lead, we are unlikely to see a return to the fear of immediate military confrontation between the two superpowers. This is not, however, an invitation to return to isolationism. America's enduring worldwide interests require that we remain involved in the international arena. Our task is to maintain the constancy of purpose that brought about a favorable resolution of the Cold War while shifting our focus and attention to a more diverse set of challenges.

In the years ahead, our Nation's leaders will still find naval forces just as useful, just as necessary, and just as important as they have been so often during the years of the Cold War. In peacetime, crisis, or conflict, naval forces will continue to serve our Nation and our national leadership. Our ability to refocus our efforts upon the changing requirements of the next decade will determine how well we meet the challenges before us.

APPENDIX

BUILDING THE FUTURE FORCE, THE FISCAL YEARS 1992–1993 NAVY BUDGET

The U.S. Navy of the 1990s will be a force evolving along with U.S. national security strategy. It will have the capability to counter regional threats to U.S. interests and the ability to reconstitute in the event of global war. This force will necessarily grow smaller, responding to national priorities in a changing international environment. The Navy budget for 1992 reflects the prudent adjustment of naval forces necessary to maximize the investment already made, while accounting for the changes taking place in the world and our Nation's financial realities.

A FORCE FOR THE FUTURE

We will reduce the size of the Navy to a balanced fleet of about 450 ships by 1995. It is a highly capable force considering the world environment, our Federal budget goals, and the maritime nature of our Nation. The following table contrasting fiscal year 1987 Navy force levels with those planned for fiscal year 1992 illustrates the significant drawdown in naval forces over a 5-year period.

	1987	1992
Strategic Forces:		
SSBN	37	29
Combatant Forces:		
Aircraft carriers [1]	13	12
Attack submarines	102	88
Amphibious ships	64	62
Surface combatants	222	151
Patrol combatants	6	6
Mine countermeasures	4	13
Combat logistics	56	53
Support Forces:		
Support ships	55	62
Total	559	476

[1] This figure does not include carriers undergoing SLEP or nuclear recoring

It should be noted that Operation Desert Storm will necessarily affect the timing of our ship inactivations. For example, current plans to retire both remaining battleships and the aircraft carrier U.S.S *Midway* by the end of fiscal year 1991, as well as to convert U.S.S. *Forrestal* to a training carrier (AVT) in the same period have been put on hold. Once hostilities in the Persian Gulf theater cease, we will move to complete these actions as soon as possible.

The requirements for a balanced Navy are derived from a number of calculations but, in the final analysis, they are predicated on the assumption that the United States will maintain the capability to protect its interests abroad. In peacetime, we have routinely deployed up to 30 percent of our available forces. That level of deployment provides a naval presence in areas of potential conflict, as well as an ability to surge forces from the United States for crises or regional conflict. It also enables us to maintain our weapon systems, ships, and aircraft and to train our people. It also provides a reasonable balance of time at sea and in port for our sailors.

DEPLOYMENT CONSIDERATIONS

If we wish to increase our presence in a region, the percentage of the force deployed can be increased or forces can be drawn from other areas. However, as the percentage of the fleet which is deployed increases, we reduce our flexibility to surge forces and begin to constrain the time available for necessary maintenance. The impact of increasing deployment percentages for a typical ship over a 36-month period can be seen below:

Percent deployed	Months deployed	Months underway	Months out of homeport
30	11	15	17
35	12.5	16	18
40	14.5	17	19.5
45	16	18	20.5

Note that time spent underway or away from homeport does not equate to time on station in the region of potential crisis. Transit time takes up 30–35 percent of the time for a ship deploying to the Indian Ocean, approximately 15 percent of a deployment to the Mediterranean, and about 17 percent of a deployment to the Western Pacific. For planning purposes, we use 25 percent as a historical guide for transit time computations.

Additionally, there is a periodic need to modernize and repair weapons systems and platforms. On average, 15 percent of the force is undergoing major maintenance and modernization at any given time. Based on the percentage of naval forces deployed and the transit time from their homeports, it is possible to determine the overall deployment and response capability of a given naval force.

FORCE CALCULATIONS

With a force of 12 aircraft carriers, the deployment of about 30 percent of the available force—a peacetime tempo of operations—sustains between two and three carriers forward deployed for presence and immediate crisis response. Increasing the percent of the force forward deployed to 40 percent sustains about three carriers on station full time. Increasing to 45 percent would enable us to dedicate three carriers continuously to a regional conflict and surge an additional carrier to another theater if required.

Promotinq Regional Stability

In addition to the carriers described above, deploying approximately 30 percent of a force of 450 ships can support deployment of 14 SSNs, between two and three Amphibious Ready Groups and 25 to 30 other surface combatants. These ships can be configured into a wide range of task forces tailored to specific circumstances which can be dispersed within a theater of operations as desired.

For our national decision makers, this force level means that an Amphibious Strike Task Force (1 Carrier Battle Group (CVBG) and 1 Amphibious Ready Group/Marine Expeditionary Unit (ARG/MEU)) could arrive at an area of crisis anywhere in the world in less than 7 days—with a second carrier arriving in less than 15 days and a full Marine Expeditionary Brigade (MEB) on station in less than 30 days. The importance of this capability was highlighted by the initial naval response to the Iraqi invasion of Kuwait, where naval forces were one of the major deterrents to an invasion of Saudi Arabia.

Responding to Regional Conflicts

Should hostilities which involve U.S. forces break out or should we wish to bring greater power to bear on a potential adversary, we could increase the number of deploying forces to 40 percent of our total inventory. At this level of effort, we could have 3 carriers on station in less than 25 days. In less than 30 days, we could also deploy an entire Marine Expeditionary Force into theater using a combination of amphibious ships, airlift, and Maritime Prepositioning Ships. However, making a carrier available for a simultaneous crisis in another theater would probably require deploying greater than 40 percent of the force. It should be noted that, as the size of the Navy decreases, we will not be able to forward deploy as many forces as we do today without having an immediate adverse effect on maintenance and training and, over time, on the retention of our sailors.

Hedging Against Global Conflict

We currently estimate that we would have significant strategic warning of a global conflict which would allow sufficient time to reactivate decommissioned vessels and complete the construction of new ships on the building ways. The Innovative Naval Reserve Concept (INRC) is an example of the flexibility which this increased warning time allows. This new initiative for the 40-ship FF-1052 *Knox* class of ASW frigates redesignates 8 ships as FFT training platforms while placing the remaining 32 in a 180-day Reduced Operational Status (ROS). All of these ships, manned by reservists, could be brought back into service and trained for fleet ASW missions in the event of a major war. The purpose of this program is to protect our investment in these very capital-intensive resources, and allow reconstitution of forces which would otherwise take years to build. In addition, it will also increase the level of readiness and training for the Selected Reserve crews of these ships.

MODERNIZING THE FORCE FOR THE FUTURE

We have already begun building toward a balanced force which can meet all of these contingencies. It will be smaller, but we cannot afford for it to be less capable. Older ships and aircraft are being retired at the end of their service lives some even sooner in cases where the cost of their maintenance and upkeep is disproportionate to their utility. These platforms will be replaced by fewer but more capable ships and aircraft. Many of our ongoing programs represent incremental improvements over existing, proven platforms and weapons systems. Some, however, represent significant technological advancements and will define the force of the future.

Carrier Force Levels

We expect to reach a force of 12 deployable aircraft carriers in October 1991 with the scheduled retirement of U.S.S. *Midway,* which will be relieved in Japan by U.S.S. *Independence.* In addition, U.S.S. *Constellation* will be in Service Life Extension Program (SLEP) and U.S.S *Enterprise* will be undergoing a nuclear recoring overhaul. U.S.S. *Lexington,* after a long and illustrious career, will be replaced as the Navy's training carrier (VAT) by U.S.S. *Forrestal.* As stated earlier, Operation Desert Storm may impact the timing of these scheduled transfers.

Carrier Air Wing of the Future

The carrier battle group and its airwing will remain the primary force for power projection and the centerpiece of a balanced fleet. Maintaining its technological edge is of paramount concern. The current carrier air wing is a highly capable multi-purpose force as proven in Operation Desert Storm. The carrier aircraft of today will continue to be deployed through this decade and into the 21st century. However, we must begin now to design replacements in order to avoid block obsolescence as today's aircraft reach the end of their service lives.

Attack Aircraft. The cancellation of the A-12 will require us to maintain the aging A-6 for a longer period than the Navy had previously planned. This will be accomplished by modernizing and re-winging the A-6 under the SWIP-1A Program. We are currently working with the Office of the Secretary of Defense to structure a program to provide naval aviation with the modern air wings which will be required in the 21st century. We envision that these air wings will consist of a new all-weather attack aircraft with stealth capabilities, together with an improved version of the F/A-18 which will have increased range, survivability, payload, and under-the-weather targeting capability. As soon as these programs are approved, we expect an amendment to the current budget to be submitted by the Office of the Secretary of Defense.

Air Superiority. Air supremacy was gained early in Operation Desert Storm due primarily to the superior training and readiness of our air crews and the technological superiority of U.S. aircraft. The Navy's primary air superiority fighter remains the F-14 Tomcat, which will be replaced by an improved version of the F/A-18 when the F-14 phases out in the next century. The development and procurement of a new generation fighter aircraft will be pursued after procurement of the A-6 replacement. It does not appear affordable to procure both a new fighter and attack aircraft at the same time. We will continue to buy the F/A-18 at the maximum rate affordable in order to provide sufficient aircraft to fill carrier decks in the future as older aircraft leave the inventory.

Electronic Warfare Aircraft. Current EA-6B aircraft will be remanufactured to extend their service life. We are also proceeding with a modernization program to upgrade this aircraft's electronic warfare and strike support capabilities.

Airborne Early Warning. The E-2C Hawkeye aircraft added to the airwing over the next few years will be configured with the APS-145 radar and will significantly improve the early warning and command and control capabilities of the battle group. Again, we are carefully investigating follow-on options for the capabilities provided by the E-2C and EA-6B.

Maritime Patrol and ASW Aircraft

In the absence of a follow-on long range maritime patrol aircraft, we are faced with the need to move quickly to improve our existing MPA force. Our present P-3 force provides the multifaceted, long-endurance surface surveillance capability that is necessary in maritime blockade and regional conflict scenarios such as Operations Desert Shield and Desert Storm. It also provides a long range counter to enemy surface ships and an ASW hedge against the existing Soviet and Third World submarine capability.

The SH-60B (LAMPS MK III) and the SH-60F helicopters provide improved organic ASW and anti-surface capabilities to our surface combatants and battle groups. Procurement of 9 HH-60H helicopters in fiscal year 1992 and 7 in fiscal year 1993 addresses a long-standing need for a survivable organic SAR capability for the battle group.

Jet Trainer Program

We are continuing to modernize our fleet of training aircraft with the purchase of the T-45 fixed wing jet trainer. As the TA-4 jet trainer currently in use reaches the end of its service life, the T-45, along with its associated simulator and maintenance packages, will provide our carrier based naval aviators with the finest training available. We plan to procure 12 of these aircraft in both fiscal year 1992 and fiscal year 1993, 36 aircraft in fiscal year 1994, and 48 aircraft per year from fiscal year

1995 through fiscal year 1997.

AIRCRAFT PROCUREMENT PLAN

Aircraft	Fiscal year 1991	Fiscal year 1992	Fiscal year 1993
EA-6B Prowler (Electronic Warfare)	1		3
AV-8B Harrier (Attack)	24		
F/A-18 Hornet (Strike/Fighter)	48	36	[1] 20
CH/MH-53 Sea Stallion (Helo)		20	20
AH-1W Supercorba (Attack Helo)		12	12
HH-60B Seahawk (Combat Rescue)		9	7
SH-60B Seahawk (Escort-Based ASW Helo)	6	12	12
SH-60F Seahawk (CV-Based ASW Helo)	18	12	12
E-2C Hawkeye (Surveillance)	6	6	6
T-45 Goshawk (Trainer)		12	12
Total Aircraft	103	119	104

[1] Final number is pending a decision by the Office of the Secretary of Defense and will be included in the amended budget submission.

Submarine Fleet of the Future

Trident. The final Trident ballistic missile submarine was funded in fiscal year 1991, completing the most modern, survivable, and flexible leg of our Nation's strategic triad. With the Trident II (D-5) missile now at sea, we also have a weapon which can be employed with pin-point accuracy against even the most hardened target. Although we will not backfit the D-5 missile into early *Ohio* class SSBNs, our strategic nuclear deterrent force remains strong and reliable and will serve us well into the next century.

SSN-21. Our attack submarine force consists of *Los Angeles* class SSNs and the remaining *Sturgeon* class SSNs which were built during the 1960s. These submarines have performed magnificently and are highly capable, but they contain little room for today's more modern systems. We plan to build at least one *Seawolf* class SSN per year to replace these ships as they reach the end of their safe service lives and to keep pace with improvements in the Soviet submarine fleet. Additionally, we are commencing a study effort to define new, lower cost options for a successor to the *Seawolf.* While affordability will be a major consideration, this follow-on SSN must be capable of maintaining our edge in ASW against projected 21st century threats.

Surface Fleet of the Future

The United States will rely increasingly on flexible and mobile surface forces to protect our national interests and ensure global stability in the future international environment. The future surface fleet will consist of technologically sophisticated ships capable of operating across the full spectrum of independent and battle force missions. These surface forces will ensure our continued access to critical sea areas, will be capable of projecting power ashore, and will be able to defend themselves against technologically advanced threats.

Our shipbuilding program has decreased significantly from earlier years. We are now building an average of 5 combatants and 4 amphibious/support ships per year, compared to the average of 9 combatants and 8 amphibious/support ships built per year in the 1980s. Despite these lower numbers, we are building toward a force composed of individually more capable ships. From the outset, however, it is essential that we understand that this 8 ship/year building rate, coupled with a notional 35 year service life, could reduce us to a Navy 50 percent of the current size within a few decades. Careful management of current assets and future investments will be needed to assure maintenance of sufficient force levels to meet national requirements. Current procurement plans provide for continued—though much slower—modernization in ASW, general purpose, amphibious, and mine sweeping forces, as well as oceanographic research ships.

DDG-51. The *Arleigh Burke* (DDG-51) class is the Navy's second class of Aegis surface combatant. It contains significant technological advances over previous destroyers, which will enable it to deal with more advanced threats. Although budgetary constraints have caused us to reduce the projected construction rate from previous years, the current plan continues the procurement of the DDG-51 Flight II as the primary replacement for the DDG-2 and DDG-37 classes. This is a reduction in modernization plans from those agreed to in the Major Warship Review, which had programmed a follow-on DDG-51 Flight III with an integrated ASW helo capability.

Combat Logistics. The new AOE-6 class Fast Combat Support Ship significantly enhances our ability to sustain deployed carrier battle groups. Although the reduced AOE-6 shipbuilding plan will not allow us to achieve the original goal of one AOE per battle group, we plan to satisfy CVBG deployment needs in the near term by substituting the combination of an AE and an AOR/AO/TAO for the AOE. To help meet future requirements, we will continue to "jumbo-ize" the AO-177 *Cimarron* class oilers, adding a significantly upgraded refueling capability as well as the ability to carry a limited amount of ammunition.

Amphibious Lift. Our amphibious lift proved itself capable and ready in the deployment to the Persian Gulf of the largest amphibious task force since the Inchon landing during the Korean war. As a part of overall force reductions, amphibious forces capability will be gradually reduced to support 2.5 Marine Expeditionary Brigades. In fiscal year 1992 and fiscal year 1993, we will see the final two hulls of the LSD-49 (cargo variant). Fiscal year 1992 also contains the last 12 LCACs needed to fulfill our requirement for high-speed over-the-horizon amphibious assault. Additionally, planning is on track for fiscal year 1995 procurement of the first LX, a follow-on ship scheduled to replace the LPD class which is nearing the end of its effective service life. A final major planning change in the area of amphibious lift is our decision to halt the LHD program with the construction of LHD-5 in fiscal year 1991.

Mine Warfare. The MCM-1 *Avenger* is the first of a new generation of mine countermeasures ships designed to replace the aging MSO class ships. The *Avenger* class embodies significant technological advances in mine hunting and mine neutralization. In addition to completing construction of the *Avenger* class, we are building the MHC-51 *Osprey* class coastal mine hunter. We are planning a surface MCM program of 14 MCM-1s, 12 MHCs and 8 MHC(V)s, which are deployable versions of the MHC.

SHIP CONSTRUCTION PROGRAM

Class	Fiscal year 1991	Fiscal year 1992	Fiscal year 1993
SSBN 726 Ohio-class (Trident Ballistic Missile Submarine)	1		
SSN 21 Seawolf-class (Attack Submarine)	1	1	1
DDG 51 Arleigh Burke-class (Aegis Destroyer)	4	5	4
LHD 1 Wasp-class (Amphibious Assault Ship)	1		
LSD 41 (CV) Whidbey Island-class (Cargo Variant Dock Landing Ship)	1	1	1
MHC 51 Osprey-class (Coastal Minehunter)	2	2	2
TAGOS 23-class (Ocean Surveillance Ship)			1
AOE 6 Supply-class (Fast Combat Support Ship)		1	
TAGS/AGOR (Oceanographic Research Ships)		2	2
Sealift		[1] TBD	[1] TBD
LCAC (Landing Craft Air Cushion)	(12)	(12)	
Total Ships	10	12	11

[1] Dependent upon results of the Congressionally Mandated Mobility Study (CMMS).

It is more important than ever to maintain the forward momentum of our shipbuilding program. The industrial base and secondary vendor base of this vital industry are shrinking dramatically. The Navy now provides over 96 percent of the income of the U.S. shipbuilding industry. We have entered an era where we may no longer have the industrial capacity to rebuild a fleet in time of crisis. We must maintain sufficient construction to provide a capable fleet over the long term.

Strategic Sealift

The prudent investment of over $7 billion dollars in strategic sealift modernization during the 1980s played a vital role in the rapid and timely response of sealift to Iraq's invasion of Kuwait. Desert Shield and Desert Storm typify the kind of rapidly evolving regional crisis response we can expect in the post-Cold War environment and highlight the need to review our strategic lift capabilities and take appropriate action in support of national sealift policy. Our budget contains $1.2 billion over the fiscal years 1992-1997 period for procurement of sealift ships. The exact ship numbers and types will be determined by the Congressionally Mandated Mobility Study (CMMS). We are examining options to build or buy additional roll-on/roll-off ships for the Ready Reserve Force (RRF) if the CMMS should so recommend.

Space and Electronic Warfare

Recognizing the need for a coherent approach to the integration, management, and tactical employment of our surveillance, targeting, communications, and electronic warfare systems, we have established Space and Electronic Warfare (SEW) as a primary warfare mission area. SEW incorporates space assets, command, control, communications (C^3), C^3 countermeasures (C^3CM), and electronic warfare to maximize our technological superiority and to improve our ability to operate and fight together with allied and joint forces. It also encompasses information warfare and seeks to assure communications between tactical, space, surveillance, and strategic warfighting systems.

As high technology weaponry and sensors become more available to Third World nations, they will gradually improve their ability to integrate and tactically employ these advanced systems. The integration of SEW into force-wide designs and tactics seeks to safeguard our offensive and defensive abilities against a widening range of threats.

Oceanography

We continue to modernize our oceanographic data collection, assimilation, and dissemination systems to keep pace with the demands of our Navy's new technology. We will maintain a vigorous, deep ocean survey program since bathymetric and gravimetric data are essential to the operations of our tactical and strategic weapons systems. One of our coastal survey ships is presently employed in inshore survey operations for Operation Desert Storm. More efficient technology is also being incorporated into the new Coastal Hydrographic Survey Ships, USNS *McDonnell* and USNS *Littlehales* which are being purchased in fiscal years 1992–1993.

NAVY MANPOWER

There is no investment of defense dollars from which more gain is realized in the near term or over time than our investment in people. Hardware and platforms depreciate with age, becoming increasingly expendable with obsolescence. Our people, on the other hand, gain increasing value throughout their careers. At no time in recent history has the investment of our Nation in Navy men and women been so vividly displayed to the world as in the execution of Operations Desert Shield and Desert Storm.

In times of force reductions it is crucial that we keep the well-being of our men and women in sharp focus. As we draw down our personnel levels to 510,000 by the end of fiscal year 1995, we must minimize the number of professional service members who are involuntarily separated. At the same time, we must maintain a suitable quality of life for those people who continue to serve their country. If we exclude personnel in transit or training, then 70 percent of our enlisted force is either at sea or assigned to overseas shore duty. Accordingly, it is essential that we apply future budgetary reductions carefully in order not to decimate the number of CONUS shore billets available for our sailors.

Quality of Life

We are continuing to pursue those personnel programs and initiatives that have paid off so handsomely in the past, including more and improved family housing, child care centers, medical care, and base maintenance and support. To keep our ships and aircraft squadrons fully manned we must provide a working environment that is as safe and comfortable as possible and ensure that the families of our sailors are taken care of during their absence at sea. Additionally, we must also attend to the spiritual well-being of our forces through a variety of religious, counseling, and support programs.

A fair compensation package is essential to supporting our sailors and their families, and is an important tool in attracting and retaining the kind of high quality people that we need. Unfortunately, military pay raises have lagged significantly behind private sector wage growth during the last decade. As we move toward a smaller force, it is important that we send the right signal of support to our men and women in uniform. I strongly support the 4.1 percent pay raise requested in the budget.

We also continue to strive for a better sea/shore rotation schedule which provides an opportunity for our people to expand their professional horizons. Throughout this period of dynamic change in the Navy, the cornerstone of our personnel programs remains our unrelenting commitment to professionalism—a commitment that has paid off handsomely in the performance of our forces in the Middle East.

Operations Desert Shield and Desert Storm

The realities of Operations Desert Shield and Desert Storm require extended family separations for our service members. As a result of a concerted effort over the last decade, our system of family support on the home front has dramatically increased. This system is composed of a variety of organizations including Family Services Centers, Dependents' Assistance Boards, ombudsmen organizations, chaplains, wives clubs, and command support groups. We are making every effort to provide a support system that is responsive to the needs of our families during this period of increased stress.

Officer Accessions

As force reductions are initiated, accession levels will be decreased proportionately. The Navy will meet Department of Defense guidance to reduce the size of the service academies, and the size of the Naval Academy brigade will decrease from the currently authorized total of 4,525 Midshipmen to less than 4,000 by 1995. We will also meet congressional requirement to reduce the class entry size of the entering class to 1,132 by July 1991.

NROTC accessions will also be reduced over the next several years, with accessions declining from the current level of 1,600 to 1,100 in fiscal year 1995. Failure to adjust the NROTC program overhead would have resulted in smaller, less viable units and an unacceptable increase in the cost per NROTC commission. Consequently, the number of NROTC units will be reduced from 66 to 53, a reduction that keeps the Navy's ROTC production in balance with accession goals and scholarships.

Selective Early Retirement

Faced with the requirement to reduce our officer strength rapidly while preserving reasonable career opportunities for our junior officers, we have very reluctantly formed Selective Early Retirement (SER) boards to identify captains and commanders for early retirement. Using the procedures specified in DOPMA, the first in a planned series of these boards convened in December 1990 and selected 442 officers to retire no later than August 1, 1991. Though a painful process, it is much preferred to forcing mid-career officers out of service.

Recruiting

A key element of Navy manpower strategy has always been to recruit and retain those young men and women who are intellectually, morally and physically most capable of doing the job. It is essential that the caliber of the young people we recruit into the Navy be progressively improved as we drive toward a smaller and more technologically advanced force. Our goals are high—we seek at least 95 percent high school graduates, 60 percent of all recruits from upper mental groups, and zero mental group IV recruits. The payoff of our past investments in quality is apparent in the fleet today. We are experiencing lower remediation rates in boot camp, less attrition from technical training, higher advancement rates, and lower desertion rates, all as a result of our commitment to quality. This enduring commitment to attract and retain the highest quality personnel will enhance our readiness to meet any future threat.

NAVAL RESERVE FORCE

Recall

The performance of our reserve personnel in Operation Desert Storm validates the Naval Reserve as a critical link in our Navy's crisis response effort. When called, Naval Reservists have reported for duty trained and ready—filling virtually all requirements for reserve augmentation.

The number of reservists recalled has grown rapidly during recent weeks, with significant numbers of those individuals scheduled to deploy to the Persian Gulf region. With the current CNO recall authorization standing at over 32,700, we have actually recalled, as of February 7, 1991, over 18,300 Navy Selected Reservists. Over half of those recalled have been Naval Reserve medical personnel. Many provided the "backfill" needed to sustain patient care capability at CONUS medical treatment facilities. Others were called-up with the activation of two Naval Reserve fleet hospitals, while still others have augmented the hospital ships *Mercy* and *Comfort,* enabling them to double their patient care capability to 1,000 beds each. The balance of the recall has involved the full spectrum of reserve units, including: Mobile Inshore Undersea Warfare, Mine Warfare, Military Sealift Command, Naval Control of Shipping, Intelligence, SEALS, Chaplains, Public Affairs, Strike Rescue, Cargo Handling, Seabees, and Ship Augmentation. Additionally, four reserve transport squadrons have been recalled to support airlift of personnel and cargo in the operational theater.

Naval Reserve Reductions

The ongoing reduction in active force structure will cause a corresponding reduction in Naval Reserve manpower levels. Selected Reserve numbers, which include both SELRES and TAR manning levels, will see a reduction from fiscal year 1991 force levels of about 12 percent, to a total of approximately 134,600 in fiscal year 1992. These reductions are driven by a combination of changing requirements and reduced active force structure.

NRF Surface Forces

The increased warning time provided by a reduced Soviet threat enables us to expand the use of Naval Reserves through the Innovative Naval Reserve Concept (INRC) which was described earlier. The INRC will achieve a significant savings compared to current FF-1052 costs. This program preserves force structure and allows reconstitution to full capability in a mobilization scenario. Additionally, NRF mine warfare forces are being significantly modernized by the addition of new MHCs.

Naval Reserve Aviation

Our two reserve carrier air wings remain ready and highly capable forces. Today's less immediate Soviet submarine threat has enabled the size of the Maritime Patrol Aircraft to be changed from 24 active/13 reserve squadrons to 18 active/9 reserve squadrons. In addition, squadron aircraft allowances have been reduced to 8 aircraft for each active and reserve squadron rather than the previous 9 aircraft. We no longer maintain the Squadron Air Augmentation Unit program, which augmented active fleet squadrons with reserve personnel. Other reductions include the deletion of the two Reserve Aerial Mine-Countermeasure (HM) squadrons and one of the three Reserve LAMPS MK I squadrons.

MEDICAL CARE

In planning for the future, we have made a commitment to ensure the continuing well-being of Navy medicine, realizing full well that it directly affects not only our active duty forces and their medical readiness, but also the entire community of retirees and families of active duty personnel. As manpower and force structure have been reduced in the current budget, we made a deliberate decision to protect funding for Navy medical personnel and programs, in order to maintain and improve medical care for our people and their families. This is a critical readiness and quality of life issue that must remain in the forefront of future planning, as it is inextricably linked to our ability to quickly respond to contingencies such as Operations Desert Shield and Desert Storm, our retention goals, and overall fleet readiness.

Our funding plans for the future focus on several key areas of health care and aim to carefully balance direct care, CHAMPUS, managed care, and coordinated health care alternatives. We will continue to invest in the efficiencies and benefits resulting from the Medical Blue Ribbon Panel initiatives. We have increased CHAMPUS funding levels in both fiscal year 1992 and fiscal year 1993 (although costs will continue to rise) while incorporating projected savings from contracting, partnership agreements and the CHAMPUS Reform Initiative. We continue to explore innovative ways to use the flexibility granted by Congress to implement effective strategies for ensuring access to health care services while minimizing the use of CHAMPUS.

ENVIRONMENT

Environmental Awareness

As we witness a marked upsurge in environmental awareness in society as a whole, we in the Navy are committed to protecting our fragile environment, particularly in the delicate coastal and intertidal zones. Although naval forces usually operate in the open oceans, our bases, maintenance facilities, and near-shore operating areas give us a very large and prominent presence in the coastal zones of the United States and throughout the world. Accordingly, we are continuing with a variety of programs that foster a heightened awareness of environmental concerns within our forces and create a sense of environmental stewardship which pervades the entire chain of command. Some of our ongoing programs that have had significant positive impact in our day-to-day operations, both afloat and ashore, include:

intensive management of hazardous material, minimization of hazardous waste, restoration of existing hazardous waste disposal sites, reduction of plastics disposal at sea, conservation and eventual elimination of ozone depleting substances, and strict adherence to laws governing the discharge of oily wastes and atmospheric pollutants. The Navy is committed to a strong and active participation in environmental compliance.

Base Closures and Reductions

As the size of the Navy is reduced, it is essential that we have a corresponding decrease in the size of our supporting infrastructure. A separate list of recommended shore infrastructure adjustments will be submitted by the Secretary of Defense. This list will contain base closure recommendations and realignments driven by changes in the force structure. The configuration of our future infrastructure will be significantly less than it is today, and will be designed to enable us to efficiently perform our mission. Until we obtain final approval to reconfigure our shore infrastructure, we intend to adequately fund the operations and maintenance of our bases in fiscal year 1992.

PILLARS

The fiscal years 1992-1993 budget has been built upon a comprehensive framework supported by the four principal budget pillars, shown here accompanied by their percent share of the budget.

	Fiscal year 1991 President's budget (percent)	Fiscal year 1992 President's budget (percent)
Force Structure	22	15
Readiness	54	61
Sustainability	8	7
Modernization	16	17

As a result of the continuing decline in fiscal resources in consonance with a smaller force structure, the fiscal year 1992 budget reflects a decrease in funding for both Force Structure and Sustainability. Modernization and Readiness show proportionate increases, which is consistent with our goal of keeping forces capable even while we necessarily reduce our numbers. A brief review of the primary elements contained within each of the four pillars follows.

Force Structure

The Force Structure pillar includes ship procurement, aircraft procurement, and new mission military construction. For fiscal years 1992-1993, force structure experienced a decrease in funding of $19 billion from the fiscal year 1991 President's budget, a 7 percent drop in share of Navy TOA. The aviation program reflects the immediate loss of the P-7, A-12, and F-14 remanufacture programs. While we can survive a short-term reduction in aviation funding, sufficient funding over the long haul is a critical factor in ensuring the viability of a carrier-based tactical air capability into the next century. Fiscal year 1992 capital investment in shipbuilding is considerably less robust than in previous years, reflecting current lower budget levels.

Readiness

The Readiness pillar supports the daily operations of our active forces, and includes: fuel and spares; military and civilian pay; ordnance consumption; depot maintenance of ships, aircraft, and ordnance; training; and medical services. Although this pillar decreases by $7.4 billion in fiscal years 1992-1993 from the fiscal year 1991 President's budget, its overall share of Navy TOA increases by 7 percent. This increase is consistent with our goal of adequately funding and training our forces to prevent a "hollow" force structure. These readiness levels are absolutely critical in view of the forward deployed and expeditionary character of the majority of our naval forces. The response of naval forces to Desert Shield and Desert Storm clearly reflects the continued high premium that we place on readiness. However, because of the requirement to deploy ships quickly to the Persian Gulf, some sailed before the completion of scheduled maintenance and extended maintenance on others was deferred. This backlog will need to be completed after the conclusion of Operation Desert Storm.

Sustainability

The Sustainability pillar supports the Navy's ability to sustain wartime operations and focuses primarily on ordnance procurement and the Naval Reserve Force. This area has experienced a $5 billion decrease in fiscal years 1992-1993 from the fiscal year 1991 President's budget and a 1 percent decrease in share of Navy TOA. Even though ordnance investment is decreasing, current procurement will provide inventories which are sufficient to support projected future maritime contingencies. Procurement of ordnance designed to counter the Soviet threat has been restructured and procurement strategies refocused to sustain the requirements of regional conflict scenarios. In the case of those weapons which have projected inventories not yet sufficient to completely support regional conflicts, the planned procurement will either result in increased sustainability or, by keeping a warm production line open, ensure that weapon production can be ramped up to meet future uncertainties. As Operation Desert Storm unfolds, the sustainability budget contains the most uncertainty and potential for growth. To maintain our existing warfighting advantages, the large expenditures of land attack ordnance, including TLAM, HARM and precision standoff weapons will, as a minimum, have to be replaced.

Modernization

The Modernization pillar contains improvements in the military capability and effectiveness of our existing forces, including aircraft modifications, ship modifications, ordnance modifications, and research and development. As with the other pillars, modernization has been decreased by $3.8 billion in fiscal years 1992-1993 from the fiscal year 1991 President's budget. Even though modernization increased by 1 percent as a percentage of Navy TOA, the substantial cuts in our investment in modernization for surface ships, submarines, and aircraft will cut into programs aimed at augmenting the major warfighting capabilities of these platforms.

A BALANCED AND FLEXIBLE FORCE

The smaller U.S. Navy described in the fiscal years 1992-1993 budget provides an appropriate sea-based strategic deterrent against any current or potential nuclear threat to our country, as well as a realistic hedge against a global threat to our national interests. It also provides:

— The capability to maintain tailored naval task groups on station for stability operations and ready crisis response in several theaters of strategic importance.

— The capability to respond promptly with appropriate forces to emerging crises.

— The capability to surge forces as the forward/enabling elements of a joint task force for a regional conflict.

— The capability to sustain appropriate naval forces in a regional conflict while continuing limited stability operations elsewhere—but only through major departure from preferred deployment/rotation policies.

— A base for mobilization and reconstitution of naval forces in the event of a change in the geostrategic climate and a march toward global conflict.

Chairman NUNN. Thank you very much, Admiral.

[Whereupon, at 2:44 p.m., the committee proceeded into a business meeting.]

[Whereupon, at 2:46 p.m., the committee resumed the hearing.]

Chairman NUNN. General McPeak.

STATEMENT OF GEN. MERRILL A. McPEAK, USAF, CHIEF OF STAFF, U.S. AIR FORCE

General McPEAK. Thank you, Mr. Chairman. It is an honor for me to be here. I think the Air Force is in great shape. Our recent performance speaks for itself in that regard. We have great people. Our equipment is the standard for the world. Our readiness is good. Our sustainability is good. We work well with our sister services, and I think, as I said, our performance in that regard recently speaks for itself. I do ask permission to enter a statement into the record.

Chairman NUNN. Without objection, it will be part of the record.

[The prepared statement of General McPeak follows:]

PREPARED STATEMENT BY GEN. MERRILL A. MCPEAK, CHIEF OF STAFF, U.S. AIR FORCE

SUBJECT: FISCAL YEAR 1992 AIR FORCE POSTURE

At the time this statement was drafted, our forces were beginning the return home following the extraordinarily successful conclusion of Operation Desert Storm. U.S. forces, in conjunction with forces from allied nations, have achieved a stunning victory. These Desert Storm forces—from all the services—have drawn upon over 20 years of investment to provide the Nation with the kinds of responsive and flexible capabilities needed to underwrite U.S. national security. Future capabilities will depend, in turn, upon choices made today.

While we share the Nation's pride in all the forces, the events of the past few months have demonstrated to the Nation the importance of airpower in modern conflict. In Operation Desert Shield/Storm, our air forces have proven flexible and responsive—their combat effectiveness the result of a combination of training, readiness, and modern equipment. Stealth, perhaps the most revolutionary set of technologies since the advent of radar and the atomic bomb, has been proven under fire. F-117A aircraft have operated with impunity in contested air space, without the host of support aircraft (air escort, defense suppression, and associated tankers) required by more conventional airframes. For example, F-117As, representing 2.5 percent of the combat assets, covered approximately 31 percent of the targets in the Air Tasking Order for the first 24 hours of the air campaign. Precision-guided munitions and stand-off weapons have also proven their merit in destroying critical elements of Iraq's war machine. And General Schwarzkopf's call for more B-52s has illustrated the continuing importance and utility of conventional heavy bombers.

We will carefully study the lessons of this war to prepare for the next conflict. So will our potential adversaries. For example, the Soviets have already formed groups to study "lessons learned" from Operation Desert Storm. In future, enemy air defenses will likely become more robust and effective; conventional targets more hardened and dispersed. We need to be prepared for the future—to learn from this war, not just plan to repeat it.

GLOBAL REACH—GLOBAL POWER

During hearings held at the same time last year, the Air Force laid out its strategic planning framework for the future. Entitled *Global Reach—Global Power*, this framework capitalizes upon the inherent characteristics of airpower—speed, range, flexibility, precision, and lethality—to help underwrite U.S. national security. Operation Desert Shield/Storm has shown this global reach and global power in action. In its planning for fiscal years 1992/93, the Air Force followed the *Global Reach—Global Power* framework in applying resources. The President's fiscal years 1992/93 budget sustains this vision to support U.S. national security for the long term.

Extraordinary international developments over the last few years have created the potential for a significantly different security environment as we approach the beginning of the 21st century. These changes do not promise a tranquil world nor an end to threats to American interests around the globe. Soviet policy declarations reflect changes in Soviet intentions, but the ultimate direction of the Soviet Union is far from clear. Many developing nations possess formidable arsenals of growing sophistication, which, as demonstrated recently by events in the Arabian peninsula, can threaten U.S. interests and allies.

In the face of these uncertainties, the fundamental U.S. national security objective remains the preservation of the United States as a free and independent nation. The foundation of our defense strategy is deterrence—deterrence based on a mix of nuclear and conventional forces, strong allies, forward defense, aerospace and maritime superiority, and power projection capabilities. We must continue to deter a Soviet nuclear attack and stabilize the nuclear balance through arms control coupled with prudent modernization. For conventional forces, the focus has shifted to regional contingencies. To contain local and limited wars, we must improve our capabilities to project power—the United States must increasingly emphasize rapid, mobile, and lethal long-range capabilities.

This new world we are rapidly moving into plays to Air Force strengths—rapid, deployable, long-range, flexible, and lethal capabilities, which can deter, provide a tailored response, or punch hard when required. The *Global Reach—Global Power* framework lays out five main objectives and associated forces for the Air Force to deal with this uncertain world:

— *SUSTAIN DETERRENCE*—Nuclear Forces

— *PROVIDE VERSATILE COMBAT FORCE*—Theater Operations and Power Projection

— *SUPPLY RAPID GLOBAL MOBILITY*—Airlift and Tankers

— *CONTROL THE HIGH GROUND*—Space and C3I Systems

— *BUILD U.S. INFLUENCE*—Strengthening Security Partners and Relationships

The process of developing plans to support these objectives was conducted within the constraints of downward trends in defense spending. Continuing concern over the Federal deficit has made tighter defense budgets a way of life, forcing the Air Force to make many difficult decisions to provide the full range of capabilities needed in the challenging future. Figure 1 provides a dramatic illustration of the challenge facing the Air Force in the 1990s. By fiscal year 1997, our purchasing power will have declined 45 percent from the peak funding year of fiscal year 1985.

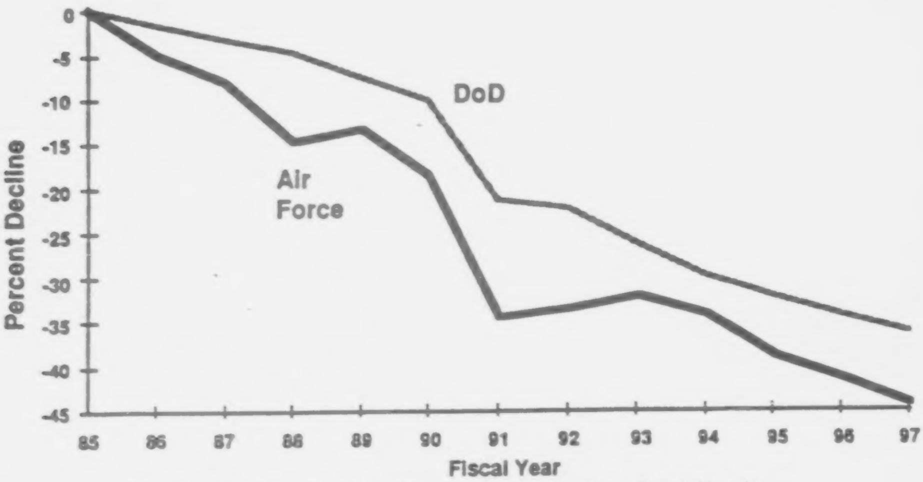


Figure 1—Purchasing Power Cumulative Real Decline
(in FY92 Constant Dollars)

After several years of dramatic decline, the Air Force's fiscal year 1992 budget request for $86.8 billion in total obligational authority (31.1 percent of the total DOD request) provides a modest real growth over fiscal year 1991 of 0.8 percent. The biennial budget also requests $91.7 billion for fiscal year 1993, a 1.7 percent real growth over fiscal year 1992. These modest increases reflect the need to capitalize upon long-planned investments in order to modernize and retain capabilities in essential mission areas. In subsequent years, Air Force plans respond to continuing downward projections in defense budgets.

To develop the fiscal years 1992/93 budget, every program was scrutinized from top to bottom for relevance. We analyzed each mission area systematically to re-examine our most important requirements and rethink investment strategies. The results exploit America's aerospace technological edge to ensure maximum combat capabilities for the long term. At the same time, we have ruthlessly pursued efficiency to get the most combat power out of taxpayers' dollars.

The Air Force has deliberately chosen to sacrifice size while continuing modernization and preserving readiness—to provide a smaller, but balanced, ready, modern, and sustainable warfighting force.

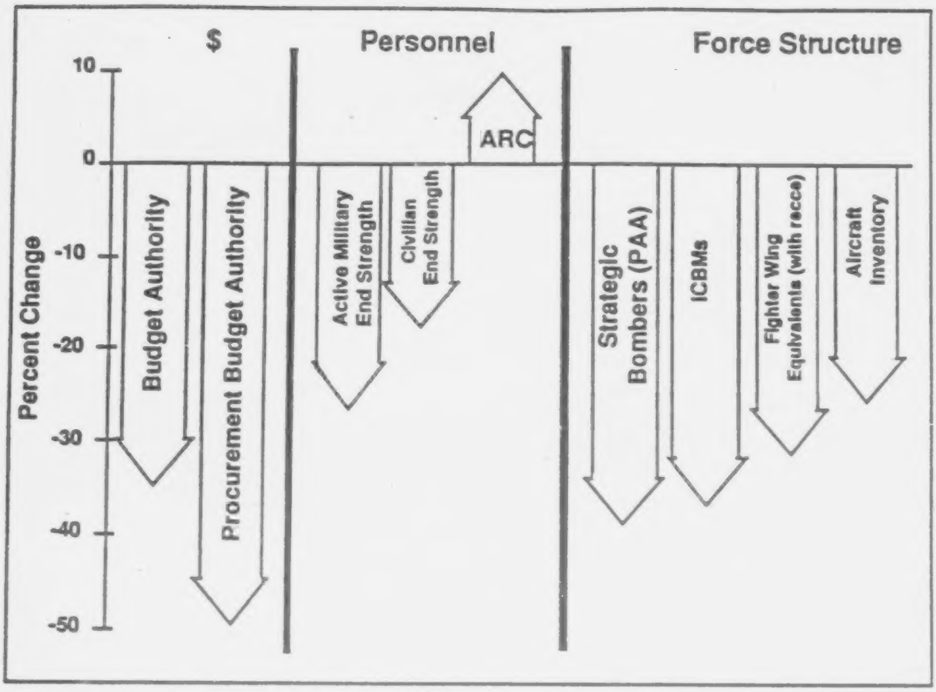


Figure 2—Air Force Budget and Program Trends, Percent Changes, 1985-95

The dramatic reductions are illustrated in Figure 2. The Air Force is reducing active and civilian end-strength and increasing reliance on the Air Reserve component to the maximum extent possible. We are also substantially cutting our bomber, ICBM, and fighter force structure. To sustain the combat effectiveness of this smaller force and position ourselves for the long-term challenge, we will continue to pursue the most vital modernization programs.

SUSTAIN DETERRENCE—NUCLEAR FORCES

Deterrence of nuclear attack is the cornerstone of U.S. national security. The Soviet Union remains the only nation capable of destroying the United States, and for the foreseeable future the Soviets will retain the capability to deliver thousands of nuclear warheads against our Nation. The Triad concept remains fundamental. Each leg of the Triad possesses unique and complementary characteristics which synergistically provides a retaliatory capability that no adversary could hope to successfully overcome. Air Force objectives in sustaining strategic deterrence are to maintain military sufficiency, flexibility, and stability in the post-START force. We continue scaled-back plans to modernize the two legs of the Triad provided by the USAF: bombers and ICBMs.

The Bomber Force

The USAF's commitment to maintaining a viable long-range bomber force is rooted in the historical experience of long-range bomber development and operations, the bomber's indispensable role in supporting nuclear deterrence, and the unique versatility that makes it a particularly effective weapon for conventional operations and the projection of U.S. power.

The rapid changes to the global security environment have added unprecedented uncertainty to our security planning, increasing the importance of flexibility and adaptability. As we have seen in Operation Desert Storm, when the theater commander needed increased firepower, he called for additional heavy bombers. Understanding the versatility of heavy bombers—in both nuclear and conventional operations—is the key to understanding their utility. The Air Force remains committed to ensuring the long-term viability of the bomber force.

In the nuclear arena, the bomber enhances the stability of the nuclear balance. Its high survivability promises any aggressor that an attack will be met with devastating retaliation, while its relatively slow speed compared to ballistic missiles means that the bomber does not pose a credible first strike threat. Because it can be generated, dispersed, launched under positive control, and then recalled or redirected, the bomber also provides our Nation's leaders with a highly flexible means of sending a variety of unmistakable messages to an adversary—messages that can help defuse and stabilize crises.

The United States currently fields two major types of heavy bombers—penetrating bombers and stand-off cruise missile carriers. A balanced combination of penetrating bombers and cruise missile carriers enhances deterrence by complicating the enemy defensive problem and adding targeting flexibility. Cruise missiles have proven to be a valuable complement to the penetrating bomber force; they extend the lives of older bombers no longer capable of penetrating effectively, add mass to the bomber attack by saturating defenses, and are excellent weapons against many fixed targets. The manned penetrating bomber is an extremely efficient, flexible, and effective system. The key to the penetrating bomber's warfighting versatility and efficient weapons delivery is the presence of a crew in the cockpit capable of reacting to situations and making decisions.

Moving to a pure cruise missile force would eliminate the advantages provided by penetrating bombers and introduce new vulnerabilities. Using long-range radars, airborne radar platforms, tankers, and fighters, Soviet air defenses could focus on detecting, tracking, and engaging non-stealthy cruise missile carriers before they could launch their missiles. Such an approach would not work against a stealthy penetrating bomber. The USAF's highest priority is the acquisition of 75 B-2 bombers, the only stealth aircraft planned for fielding in the 1990s.

The advantages provided by stealth have been proven under fire. Stealthy aircraft can penetrate defenses without the range of support assets required by non-stealth airframes—stealth provides more combat capability from a smaller number of assets with less risk to personnel. Stealth also aids in accurate delivery of munitions in combat—the accuracy of stealthy aircraft is not degraded by survivability tactics, such as jinking. Figure 3 provides a notional illustration of why a small percentage of the allied combat aircraft—F-117A force—was able to cover a large proportion of the target base during Operation Desert Storm's strategic air campaign.

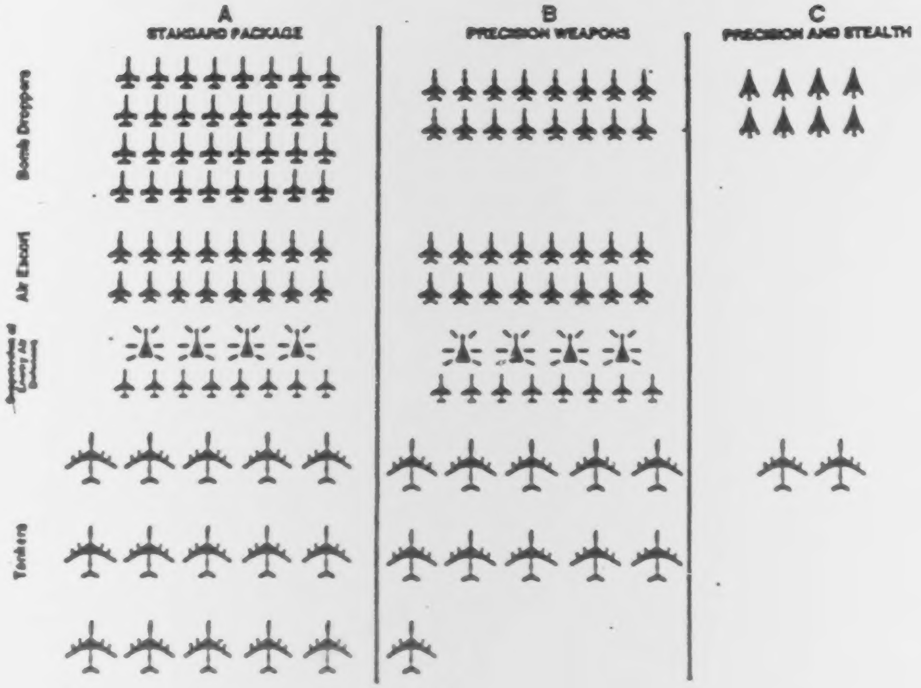


Figure 3—The Value of Stealth

And such systems allow us to recapture the element of surprise. The B-2 will offer stealthier operations than the F-117 and greater payload/range capability than the B-52 or B-1B—the aircraft will provide extraordinary versatility in supporting nuclear deterrence and enhancing our conventional warfighting capabilities. And that is the kind of flexibility we need in our future smaller force structure.

Based on the need to balance reductions across all accounts and stabilize annual B-2 funding within a constrained resource environment, the budget limits annual B-2 investment (procurement and RDT&E) to approximately $5 billion. Peak year funding for the B-2 is lower than any bomber in modern U.S. aviation history—ranging from the B-36 up to the B-1. Some of these bombers were procured in relatively parlous times, but room was found for them within the agreed-on budget constraints, just as we have found room for the B-2. This budget funds four aircraft in fiscal year 1992 and seven aircraft in fiscal year 1993.

With the B-2 as the backbone of our bomber force, we will continue to upgrade the B-1B fleet and elements of the B-52 force. A defensive avionics recovery plan has been developed for the B-1B. And over the next few months, we will complete follow-on operational test and evaluation for conventional bombing certification of that aircraft. Budgetary pressures require us to accelerate retirement of the B-52G cruise missile carriers, although two squadrons of dedicated conventional B-52Gs will be retained. The B-52H force will transition to a pure cruise missile force, armed with both the Air Launched Cruise Missile (ALCM) and the stealthy Advanced Cruise Missile (ACM). Approximately half of the B-52H force will be upgraded to also support conventional operations, thus increasing their versatility to meet the demands of this uncertain world environment.

ICBMs

ICBMs make unique contributions to the Triad. They are valued for their promptness, reliability, accuracy, low operating cost, connectivity, and availability—while their near 100 percent alert rate allows the other two legs of the Triad to operate at more economical tempos.

Soviet advancements in ICBM accuracy and increased MIRVing led to increasing concern over the survivability of our silo-based ICBM force and the potential for crisis instability. Adding mobility was deemed to be the best method of addressing these problems, which in turn led to the development of the Peacekeeper Rail Garrison (PRG) program, where Peacekeeper missiles would be mounted on trains, and the Small ICBM (SICBM) program, where single warhead missiles would be mounted on Hard Mobile Launchers (HMLs).

Our adjusted ICBM modernization plans reflect the new realities of the post-Cold War era. Mobility comes at a high cost to procure and operate. And potential future arms control talks beyond START are increasingly focusing on reducing or eliminating heavily MIRVed landbased systems such as Peacekeeper and the Soviet SS-18.

These factors have led to a re-evaluation of our missile modernization plans. We intend to validate the PRG basing mode, but will pause deployment awaiting future developments. Future Peacekeeper missile buys will be terminated. The SICBM program will continue in development—the choice of a silo or mobile basing mode can be made when directions in the strategic balance become clearer. Whether mobile or in silos, the single warhead SICBM will be more stabilizing during periods of crisis than heavily MIRVed ballistic missiles.

Given anticipated START constraints on Soviet ICBMs, reductions in the threat to our missile silos allow longer-term reliance on the Minuteman missile force. Over the next few years we will begin retiring MMIIs. The MMIII force will be retained and their silos upgraded with new computers and launch control facilities. Depending on START outcomes, we will retain the option to download MMIII to a one warhead configuration in the future.

PROVIDE VERSATILE COMBAT FORCES—THEATER OPERATIONS AND POWER PROTECTION

In contrast to fairly stable nuclear deterrent objectives, the focus on regional contingencies will cause more fundamental changes in conventional forces. Our plans for USAF theater/contingency forces will improve our capabilities to project power—to increase lethality and enhance freedom of action. The ability to concentrate force in a responsive manner over great distances is a key attribute of the Air Force. During Operation Desert Shield, for example, an F-15 squadron was in place, ready to fight 7,500 miles from its home base, within 38 hours of the deployment order. Five fighter squadrons and a contingent of AWACS aircraft were in place within 4 days of the order to deploy. The Air Force's ability to project power, as well as readily adapt to changing circumstances and environments, will be increasingly important in the future.

Operation Desert Storm has highlighted the importance of training, readiness, and advanced equipment. Together they have provided a potent warfighting capability—with aircrews ready to do the job right the first time out, and with historically low casualty rates. To continue providing a modern, balanced, and effective fighter force within realistic budget constraints, we plan to significantly reduce our fighter force structure—from 38.5 tactical fighter wings (including reconnaissance assets) to 26.5 wings. This smaller force requires fewer new fighters—F-15 production has ended and F-16 production will be terminated in fiscal year 1993. To provide the most cost-effective force, we plan an aggressive 15.25/11.25 Active/Air Reserve Component (ARC) mix.

One of the first considerations of a theater commander is control of the air—since the advent of modern airpower, no major conflict has been won without it. Control of the air (air superiority) protects surface forces and provides freedom of action for both surface forces and air forces. For example, the air supremacy established in Desert Storm allowed General Schwarzkopf unparalleled freedom of maneuver in his air/ground battle. U.S. forces have come to take air superiority for granted. Our ground forces have not had to operate without air superiority since the early stages of World War II—and not a single U.S. soldier has been killed by an enemy air attack since 1953. Air superiority is also a question of where control of the air will take place. Since World War II, the United States has enjoyed the ability to control the enemy's airspace as well as our own. But to maintain control of the air into the next century, we need to modernize our air-to-air fighter forces. Two programs—the Advanced Tactical Fighter (ATF) and the Advanced Medium Range Air-to-Air Missile (AMRAAM)—are the keys to maintaining control of the air for the long term.

The ATF marries stealth, advanced avionics, and advanced performance (notably agility and supersonic cruise) to ensure control of the air—in both our own and enemy airspace—in the 21st century. In Operation Desert Storm, our fighter forces engaged adversaries equipped with what were, in some cases, equally advanced aircraft—superior training, tactics, and operational art proved to be the edge. Future adversaries will learn from this war and such advantages cannot be counted on to prevail. The ATF, combined with high quality training, will ensure that we maintain that edge for the foreseeable future.

The ATF program fits the Packard Commission acquisition recommendations and provides a model for future programs. The Packard Commission recommended a prototyping strategy for early testing and streamlined acquisition management. In 1986, the ATF entered a 56 month demonstration/validation phase. Since that time, we have tested various hardware and software prototypes, flown four prototype flight demonstration aircraft over 150 hours, met or exceeded radar cross section testing expectations on full scale models of the two prototypes, tested twelve prototype engines over 4,000 hours, flown avionics flying labs on over 100 sorties, and tested avionics integration in ground laboratories. In addition, acquisition management follows the new Packard-recommended streamlined chain of authority. The ATF is our highest priority fighter program.

AMRAAM will provide existing and projected fighters with a critical edge in combat. Current radar missiles must be continuously guided to their target by the launch aircraft, which must keep its radar antenna pointed at the target until missile impact. This severely restricts the aircraft's maneuverability and reduces survivability—moreover, only one target can be engaged at a time. With AMRAAM, our pilots will be able to launch a missile at one target, maneuver, engage and launch at another target, and continue maneuvering—all while the missiles are independently homing in on their respective targets. Recent tests of AMRAAM have been very encouraging. The program will enter full rate production with 1,000 missiles in fiscal year 1992 and 1,310 missiles in fiscal year 1993.

An important component in control of the air involves suppressing enemy air defenses (SEAD). To maintain our effectiveness in this crucial area, we will replace the F-4G Wild Weasels with advanced capabilities on the F-16, F-15E, and future stealthy systems. Program difficulties and budget limits led to cancellation of the Tacit Rainbow defense suppression drone.

In attack operations, airpower's speed, range, and lethality allows rapid shifting of effects, concentrating firepower wherever the joint force commander needs it—from the close battle, across the length and breadth of the theater, to its deepest reaches. In the early days of Operation Desert Storm, our tactical fighters were employed for strategic effect—to reduce the enemy's capability and will to wage war. Our fighters engaged in interdiction operations to delay, disrupt, and destroy enemy surface forces and material and ensure a favorable ground force ratio at the point of contact. We also conducted air attack over the battlefield (close air support and battlefield air interdiction) by providing direct and indirect air support of ground forces.

To sustain these important attack capabilities, we will enhance our existing forces. The F-117A, which proved the promise of stealth technologies in Desert Storm, will be retained. Elements of the F-16 force will be provided with LANTIRN pods for precise night attack. The F-15E, capable of delivering precision-guided munitions (PGMs) at night, will be fully fielded—as these squadrons enter service, all of the F-111s, except the PGM-capable wing of F-111Fs, will be retired. The Air Force's next generation interdiction aircraft, the Advanced Tactical Aircraft (ATA), was to be a variant of the Navy A-12. In light of the A-12's cancellation, the Air Force will consider the Navy A-12 successor and study the potential to adapt the ATF to an air-to-ground role. For close support work, we will retain (and enhance) two squadrons of A-10s and improve Block 30 F-16s to an F/A-16 configuration in place of the canceled A-16 program.

New munitions—the Sensor Fuzed Weapon and stand-off precision weapons like the AGM-130B—will sharpen the claws of this smaller attack force. Overall, the future attack force will have greatly increased capabilities to deliver weapons precisely and at night. Recce pods will be procured for F-16s to eventually replace the RF-4Cs—such aircraft will not be maintained in separate squadrons, but will be embedded into existing units.

Our heavy bomber forces will be integrated into theater/contingency operations as the USAF transitions from "tactical" airpower and "strategic" airpower to the integrated employment of airpower. One key organizational initiative is the composite wing. Effective airpower employment depends heavily on the close integration of a range of assets—bomb droppers, fighter escort, jamming aircraft, lethal defense suppression aircraft, airborne radar platforms, tankers, airlifters, and the like. Under the composite wing initiative, many of the assets needed to form composite force packages will be located at one base under one commander. This will increase the speed at which we can deploy, significantly reduce C3 problems, and enhance warfighting effectiveness.

SUPPLY RAPID GLOBAL MOBILITY—AIRLIFT AND TANKERS

As forward forces decline, but global interests remain, mobility will be even more in demand. Strategic mobility lies at the heart of a credible deterrent posture in such an environment—without the capability to project power, there is no conventional deterrent. The Air Force provides two important components of U.S. strategic mobility: airlifters and tankers. Our objectives in the fiscal year 1992/93 budget request are to enhance U.S. rapid response capabilities and increase interoperability among the services.

Airlift Forces

To provide mobility for U.S. forces, the Nation has historically relied on a balance of the complementary capabilities of the mobility triad: airlift, sealift, and pre-positioning. Each has advantages and disadvantages—we capitalize on each method's virtues to compensate for the others' limitations. Airlift is an ideally suited mobility tool for an environment of uncertainty with widely dispersed potential flashpoints. As Vice Admiral Butcher, DCINCTRANS, recently pointed out: "We may not always have the luxury of 161 days to position our forces."

Exhaustive studies over the past decade have produced a single, consistent answer—the C-17 is the right airlift aircraft for the future. These studies call for an airlifter that can fly long ranges and carry outsize cargo, while providing the tactical performance and agility to open up more airfields for global operations. The most recent analysis—the Major Aircraft Review (MAR)—was conducted at the request of Secretary of Defense Cheney. The study looked at a wide array of options in comparison to the C-17 program, including refurbishment of the C-141 force and procurement of other aircraft such as the C-5 or civil transports. Once again, the choice was clear. As Secretary Cheney testified to Congress, the analysis showed: "The C-17 offered the most capability at least cost in every case."

The C-17 combines current technologies to create what is in many respects a revolutionary capability delivery—"direct delivery." Cargo and personnel can be flown from the United States or elsewhere directly to where they are needed. In short, the C-17 combines the advantages of a strategic airlifter like the C-5—speed, range, aerial refueling, and payload (including outsize cargo)—with those of a tactical airlifter like the C-130—survivability, ability to operate on short, unimproved airfields, agility and maneuverability in the air and on the ground, and the ability to employ different methods of airdrop. The C-17 is highly flexible, designed to efficiently meet the Nation's airlift needs across the entire range of potential scenarios.

The importance of this flexibility can be seen in looking at the operations the United States has conducted in the past 14 months. In an airfield constrained environment (like Panama), the C-17 would allow deployment of a Just Cause-sized force in just over half the time. In a relatively unconstrained airfield environment (like Desert Shield), the C-17 would still deliver significantly more power—for example, 12 more fighter squadrons and 2 more brigades in the first 12 days. Desert Storm operations add emphasis to the importance of the C-17's outsize capabilities. When the Army needed several hundred refueling trucks rapidly deployed to support maneuver operations, the Free World had only the C-5 available—the C-17 could have helped pick up that load, and could have delivered them directly to wherever they were needed.

The first C-17 aircraft has completed assembly and is being prepared for first flight this summer. This budget funds 6 C-17s in fiscal year 1992 and 12 in fiscal year 1993—it also reprofiles the program to stabilize funding and provide a more modest ramp up to production of 18 aircraft per year. The Major Aircraft Review adjusted the program to a goal of 120 aircraft. The C-17 remains the Air Force's highest priority mobility program.

The reduction in the planned buy of C-17s—a decision taken for affordability reasons—requires modernization of our tactical airlift forces to make up for the C-17's intra-theater contribution eliminated by the MAR. The C-130 fleet is aging and elements require replacement. C-130Hs will be procured—these represent an off-the-shelf capability with essentially no development cost. This budget funds 8 aircraft in fiscal year 1992 and 12 aircraft in fiscal year 1993.

Tanker Enhancements

Aerial refueling increases the Nation's flexibility to respond in a timely manner across the entire spectrum of conflict. Inflight refueling increases the range and ordnance carrying capacity of receivers—demand for refueling has become increasingly important to deployments and combat operations. During the first 4 months of Operation Desert Shield, tankers flew over 10,000 sorties to offload fuel to almost 19,000 receivers. In the first 25 days of combat operations in Desert Storm, U.S.

tanker forces flew almost 7,000 sorties to refuel about 20,000 USAF, Navy, Marine, and allied aircraft.

The KC-135 re-engining program, which provides modified KC-135Rs with a 50 percent improvement in refueling offload compared to the KC-135A, is continuing, although at a more affordable pace. In an effort to increase tanker efficiency, flexibility, and interoperability, the Air Force is also pursuing a multipoint initiative that expands on the existing KC-10 multipoint program. When refueling fighter aircraft in employment operations, tanker requirements are typically driven by time and distance constraints—within a given refueling orbit, only a certain number of aircraft can cycle through the single refueling point on our current tankers. Additional offload points—known as multipoint capability—can increase the number of fighters that can be refueled during the available time and increase operational efficiencies.

The multipoint initiative involves both fighters and tankers. The Air Force plans to add wing-tip drogue pods to KC-135R tankers. This will provide multipoint capabilities to a larger portion of our tanker force and reduce interoperability problems when refueling probe-equipped fighters (such as those fielded by the Navy, Marines, and allied nations). During the first 25 days of Desert Storm, for example, USAF tankers refueled about 4,300 Navy and Marine aircraft. Fitting probes to F-15s and F-16s will allow Air Force fighters to take advantage of multipoint tankers (although all of the fighters will retain their boom slots for maximum flexibility).

CONTROL THE HIGH GROUND—SPACE AND C3I SYSTEMS

Space is the high ground of the future. Space-based systems offer great military advantage: global coverage, low vulnerability, and autonomous operations. Smaller force levels and access to fewer forward bases will increase dependence on the force multiplying capabilities of space systems. Historically, the Air Force has been the principal provider of space systems for the Defense Department. The Air Force provides the infrastructure, approximately 90 percent of DOD's space-experienced personnel, and roughly 80 percent of the DOD space budget. Recent operations in Desert Shield/Storm have illustrated the unprecedented degree to which space systems have become integrated into day-to-day battlefield operations. Indeed, some have begun calling it the world's first "space war." Our objective in the fiscal years 1992/93 budget is to provide a balanced level of funding to meet the full range of critical requirements for the long term in communications, warning, surveillance, and navigation.

Space-based communications assets provide for global, secure, and reliable command and control of forces. The Air Force's highest priority space/C3 program is MILSTAR. The program has been restructured to reflect congressional guidance. We have reduced overall costs, eliminated lower priority program features, retained essential capabilities, and increased the system's tactical orientation.

Attack warning systems have been restructured in light of affordability concerns and the decreased likelihood of a massive Soviet attack. The space-based Boost Surveillance and Tracking System (BSTS) program was terminated—in its place, we will sustain the Defense Support Program (DSP) and pursue technology options for a potential follow-on. Continued deployment of a forward line of radars which comprise the North Warning System will provide atmospheric coverage for North America. The Over The Horizon Backscatter (OTH-B) radar system will be mothballed. Should conditions dictate, the OTH-B line could be brought back into service within a few months.

Surveillance systems provide critical information to battle commanders, regardless of conflict location. Air-breathing systems will be enhanced greatly through the acquisition of the Joint Surveillance Target Attack Radar System (Joint STARS), which was recently proven in combat during Desert Storm. And E-3A Airborne Warning and Control System (AWACS) will be upgraded to provide a cost-effective enhancement to this system's proven capabilities. These systems, together with collection assets like the RC-135, constitute a deployable set of "eyes and ears" for the theater commander. The Space-Based Wide Area Surveillance (SBWAS) program has been adjusted to a technology development program.

Space-based navigation systems enhance global deployments of air, land, and sea forces, as well as provide pinpoint weapon systems accuracies. The Global Positioning System (GPS) satellite constellation should be complete in fiscal year 1993. Troops in the featureless desert, sailors entering unfamiliar waters, and airmen conducting precision strikes have all attested to the critical contribution of this space-based system.

BUILDING U.S. INFLUENCE—STRENGTHENING SECURITY, PARTNERS AND RELATIONSHIPS

The Air Force provides the capability to enhance security conditions, strengthen security partners, and project U.S. influence, often with limited or no use of U.S. forces. Since the formation of the Air Force, we have conducted over 80 shows of force/presence missions—on every major continent and over every major ocean. Beyond our lethal assets, long-range surveillance aircraft, such as AWACS, Joint STARS, and the RC-135 also provide the means to accomplish national objectives. Packages of surveillance assets are able to deter adversaries by letting them know we are watching their every move. In the 1980s, for example, AWACS aircraft have deployed over a dozen times to various troubled regions of the world. In future, Joint STARS and RC-135s can deploy in conjunction with AWACS to provide new avenues for non-lethal deterrence and assistance to allies.

Since 1947, the Air Force has conducted over 120 air movements of national influence—activities with relatively overt geopolitical overtones (the delivery of key materials, the movement of third country forces, and the evacuation of Americans and foreign nationals). When such operations need to be carried out quickly—as they almost always do—Air Force assets will be a key player. Humanitarian operations in response to disasters also play a role in supporting U.S. national security objectives by providing foreign populations with a favorable image of the United States. In indirect fashion, this can play an important role. How often has the Air Force been called upon to perform humanitarian operations? The answer is more often than most would realize—over 360 times since World War II.

Security assistance allows us to influence events and protect national interests in areas where more direct means of intervention are not viable. Air Force training and logistics aid are politically acceptable in many situations where other forms of influence are not welcome—and the commonality of training and systems enhances interoperability and security interests with allies. Since the 1950s, the Air Force has trained many tens of thousands of foreign pilots and other military students—over 45,000 since 1980. U.S. Air Force aircraft and associated items are widely recognized for their capability (and thus in demand), an impression that will be heightened by the extraordinary success of Operation Desert Storm. Today, the Air Force share of DOD's Foreign Military Sales program stands at approximately 45 percent. And the USAF is currently engaged in 200 cooperative scientific and R&D projects across the globe. The Air Force continues to posture itself to support these important avenues in building U.S. influence overseas and supporting the security interests of the United States and our allies.

CROSS-CUTTING ISSUES

To operate better and smarter, the Air Force is re-emphasizing efficiency and focusing on the process of continuously improving quality. The common denominator is capability. As we reduce in size, we must maximize capability by protecting quality forces, readiness, modernization, and research and development.

Quality personnel are essential for a smaller force. Active military end-strength will decline 71,900 from the fiscal year 1991 to fiscal year 1993 budget requests; civilian end-strength goes down 38,000 during the same period. An array of management initiatives help us absorb these reductions—we will streamline, de-layer, and reduce overhead across the Air Force. The integration of two major commands—Air Force Systems Command and Air Force Logistics Command—will provide seamless life-cycle system management. We will reduce a range of headquarters by 25–30 percent. We will eliminate 15 of 19 Air Divisions and all Reserve Numbered Air Forces. Savings from these and other efficiencies mean more dollars available for modernization and people programs. And total quality management practices—such as those from the Packard Commission and the ongoing Defense Management Renew process—are being implemented throughout the acquisition process to procure and sustain quality weapon systems cheaper and faster.

As the preponderance of cuts come from the Active force, we increase the proportion of the Air Reserve Component (ARC) in just about every major mission area (see fig. 4). We will maintain all ARC flags and will continue to modernize ARC forces.

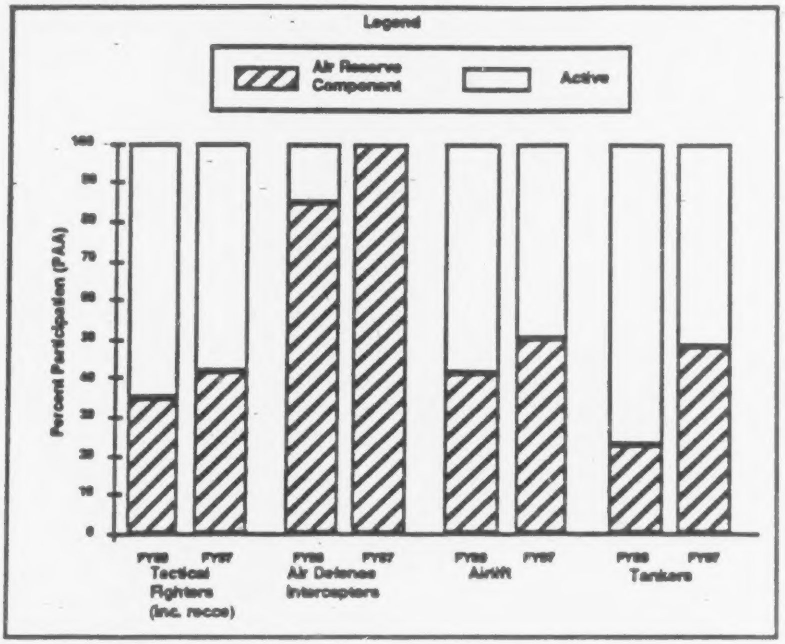


Figure 4—Air Reserve Participation in Key Mission Areas

Training improves the quality of our forces. While reductions in the number of aircraft will reduce the flying hour program by 15 percent, flying hours per aircrew will remain at roughly the same level as today. But fiscal challenges are growing—we face rising costs per flying hour (partially because of fuel costs). Coping with these challenges will be complicated by the fact that approximately 85 percent of the O&M budget now represents fixed, "must pay" bills.

Our funding of readiness and sustainability in the mid-1980s paid off with spectacular mission capable rates in Desert Shield/Storm. Our readiness is at the highest levels ever. But indicators show a reversing trend. Little or no funding for war reserve material (WRM) spares since fiscal year 1988 is beginning to show an impact. To arrest this trend, we propose to maintain a modest level of investment in WRM—continuing to make tradeoffs among our investment and O&M programs to create a balanced capability.

Changes to our infrastructure are tied directly to our plans in other areas. Base closure actions are on track; but the future timing and funding of these actions are key to the successful implementation of our force structure reductions. Military construction (MILCON) for current projects experiences a real decline, while MILCON to support new or additional systems increases. Overseas MILCON stays at minimum levels.

Increasing Air Force concern for the environment is reflected in both policy and commitment of resources. Funding for environmental protection and cleanup approaches $1 billion per year for both fiscal year 1992 and fiscal year 1993—the highest ever.

Gaining the maximum capability from existing forces means drawing upon the force multiplying effects of technology. Despite declining budgets, a robust technological base is essential. In this budget, there is more emphasis on avionics and command, control, and communications technology. Organizationally, we are re-focusing research and development by restructuring Air Force laboratories for greater efficiency.

CONCLUSIONS

We know all the members of the committee share our pride and admiration for the men and women of Desert Storm—from every service. In the air, our forces have struck with a precision and effectiveness never before seen in history. Our success has been so overwhelming that some may be misled into drawing the wrong conclusion—that Iraq was a "paper tiger." Experts know how wrong such a conclusion would be. Iraq began the war with the fourth largest army and the sixth largest air force in the world—and with equipment that included MiG-29s and T-72s, SA-6s and a modern, fully integrated, hardened air defense system. And Iraqi forces were combat experienced. Surrendering didn't come naturally to them—they'd proven their determination in battle against Iran. This was no paper tiger. Instead, it was a nation and a military stunned as we seized and held the initiative. At the strategic level, Iraq was a nation stunned by the effectiveness of our air campaign. At the operational level, it was a military stunned by the effectiveness of our interdiction campaign. And at the tactical level, it was an army stunned by the effectiveness of our air/ground campaign.

While time and analysis will undoubtedly uncover a number of reasons for the success, three will undoubtedly be key. The first is quality forces. There is simply no substitute for bright, well-motivated people. The second is quality training. Our people were ready to do the job right the first time out—they didn't have to learn the hard way. The third is quality systems. We have given our people the modern equipment they need to do their job effectively, and do it with minimal casualties. The challenge now will be to look ahead to ensure we provide the capabilities our men and women will need 10 years from now to defend our interests equally effectively.

The steps outlined in this budget protect quality forces, readiness, and modernization despite significant fiscal constraints. They do so by reducing force structure, streamlining organizations, decreasing overhead costs, and balancing sustainability. Declining budgets have posed real challenges—and we've had to make tough decisions. We've terminated numerous programs (Peacekeeper, F-16, Tacit Rainbow, ATA, A-16, Mark system, BSTS, OTH-B), and reprofiled and restructured many others (PRG, SRAM II/T, B-2, MILSTAR, C-17, and KC-135R, for example). Our objective is to create a smaller force with cutting edge capabilities and top quality people. The fiscal year 1992/93 budget ensures that the future Air Force will possess capabilities needed to provide global reach and global power—capabilities that are essential to underwrite U.S. national security in an uncertain world.

[The USAF "Report to the 102d Congress" and the Air Force and U.S. National Security: "Global Reach—Global Power" are retained in the committee files.]

Chairman NUNN. General Gray.

STATEMENT OF GEN. ALFRED M. GRAY, JR., USMC, COMMANDANT OF THE MARINE CORPS

General GRAY. Thank you, Mr. Chairman. It is always an honor to appear before this distinguished committee.

With the leadership of many administrations and the continued support of the American people as expressed through Congress, we have been able to say for many years that we could go anywhere in the world, do what must be done, and be prepared when we got there. Desert Shield and Desert Storm, we believe, provide another indication that we are able to do what we have said we could do.

We have said for some time that we could operate in a joint and combined arena. Our national commitment in the Persian Gulf was a great test of that assertion. We believe that all of the men and women of our Armed Forces—be they soldiers, sailors, airmen, coast guardsmen, or marines—performed their joint tasks in a superb manner. Since we had the opportunity to fight hand in hand with a number of our coalition allies, it seems appropriate to say that they too fought with distinction—in both our area of operations, Eastern Saudi Arabia, and throughout Eastern and Central Kuwait.

As we turn to the future, it is our belief that we must underline or reemphasize the need for global thinking and global presence. It is in the lesser developed regions of the world where your marines believe that the greatest potential for conflict exists. That is because very important resources are located in these regions—regions where we must have access and we must have trade, where we must have, in a word, stability. Stability is the one-word descriptor that we would use to describe the strategic thinking needed in the future.

There is a larger reason to pursue a policy of stability. A lot of people live in these troubled regions. In our view, we must continue our efforts to assist humanity and mankind achieve their goals and aspirations. A policy of stability will help not only our own Nation, but all nations, to achieve their goals.

In terms of a grand strategy, then, we recommend a shift from the policy of containment to a policy of stability. Such a shift will demand three supporting military strategic thought processes. First, it is clear today that we have a superb national air and space capability. In our view, any future strategy must retain these key capabilities. As a Nation, we are dependent on space both in the military and in the commercial or private sector. Second, any great nation needs to have a tough, credible land army. No large or great nation in history has survived without such a capability. Third, we remain an island nation in a maritime hemisphere, and therefore, we must incorporate strong maritime concepts into our overall strategic thinking. We must continue what I believe have been very good efforts to forge or integrate a strategy that makes use of all three of these strategic thought processes. In my judgment, we are on the right course.

With respect to your Corps of Marines, we can only say thank you for many years of support. Eleven years ago, on March 15, I was privileged to appear before you, Mr. Chairman, and many of the members of this committee at the rapid deployment forces hearings. At that time, you asked if the Marine Corps would be interested in getting light armored vehicles. We caveated our answer with the simple idea that if extra funds were added to our defense resources, and not taken away from anyone else, we would go for it. Four years later, we fielded the first light armored vehicle battalion. We used them, as we all know, with great effectiveness in Panama, and I must report to you this afternoon they were superb throughout Desert Shield and Desert Storm.

Light armored infantry battalions equipped with LAVs were the first ground units committed in response to the four Iraqi limited objective attacks centered around Khafji in the area of operations occupied by marines and our Saudi friends. On G-day, they moved rapidly through the gaps identified by our reconnaissance people, quickly bypassing the major obstacles in Kuwait. Throughout the 100-hour war, all variants of light armored vehicles performed superbly. The LAI battalions took a large number of tanks, armored personnel carriers, and enemy capability out of the fight.

You have supported us over time, as you have the Army, with the procurement of the M-1A1 tank—a good tank. Quite properly, we were at the end of the M-1A1 procurement cycle. The clear priority for armored modernization was with the Army in Europe, and we supported this priority as it was the correct one. As a result, we had not planned to introduce the M-1A1 into our tank battalions until later this year. However, operating in concert with the Army, we were able to pull together a plan and accelerate the fielding of one Marine M-1A1 battalion for Desert Storm.

We said all along that the M-1A1 is a good tank. Desert Storm proved it is a better tank if you have people who know how to fight with it. Our people did. We destroyed many of the vaunted T-72 tanks with our M-1A1 and M-60s. The speed and the maneuver of the tank, coupled with the ability of the young sergeants and corporals to do what must be done and to understand their commander's intent on the battlefield day or night, that was the difference.

You have supported us for some time in our endeavors to get the AH-1W attack helicopter, with its marvelous capability to carry the many different types of ordnance that we need when we come from the sea. We now ask you to support our program to provide that system a better night capability. It is in this program and we ask your support. We are terribly proud of what our AH-1W squadrons did during the very difficult fighting in Kuwait, where we asked two reinforced Marine divisions and an Army armored brigade to take on and defeat 15 Iraqi divisions. They did it and they did it very well. An enhanced night fighting capability will make them even better.

For 11 years now, as Senator Cohen particularly will recall from last year, this committee has consistently supported the AV-8B. That support paid off in spades during Operations Desert Shield and Desert Storm. We would not have won the victory that we did in our sector without our magnificent close air support, as well as the other integrated Marine, Navy, Air Force, and allied air support. But it was the close air support, battlefield interdiction capability and flexibility provided by the AV-8B, which made the difference for your marines. So we have a great deal to thank this committee for.

Over the years, we have said that we will take what you give us and then we will do what has to be done. Indeed, the young marines and sailors who serve in your corps have done just that. Whatever we get as a result of any budget process over the next few years, we will continue the marine tradition of making everything operate even better than it is supposed to.

In summary, we believe that we witnessed and were a part of a superb joint and combined operation. We are very proud of our role in it. We are equally proud of the fact that we did not have to step back from any of our other global commitments during Desert Shield/Desert Storm. As has been indicated, we evacuated people from war torn Liberia. We conducted an amazing rescue of Americans in Somalia. And, we continued to provide counterterrorism and other security assistance in the Philippines, including humanitarian aid. This afternoon we are operating with our Korean allies in Team Spirit, where we are trying something new—the use of a single maritime prepositioned ship—and it has worked extraordinarily well.

That topic seems a fitting end to my statement, since no one supported the maritime prepositioned ship or force capability any more than members of this committee. Let me just finish by saying that in whatever we have done, despite any difficulties encountered along the way, we have emerged on the right course and we fully

intend to stay on that course in the future. Thank you very much, Mr. Chairman.

[The prepared statement of General Gray follows:]

Prepared Statement of Gen. A. M. Gray, Commandant of the Marine Corps

ANNUAL REPORT TO CONGRESS

Mr. Chairman, distinguished members of the committee, I appreciate this opportunity to report to you on the readiness and capabilities of your Marine Corps.

PROLOGUE

For many years, Marine Commandants have been making statements on the posture and readiness of your Corps. In 1990 these statements were again put to the test. We had promised that we could respond to multiple crises around the globe at a moment's notice without mobilization. We have. We had promised that we would be light enough to get there, and heavy enough to win. We are. We had promised that we would take our place in joint and combined operations. We did. And we promised that your Marines would be warriors—second to none. We believe they are.

Our global orientation, maritime character, and expeditionary capability have all been ably demonstrated during the past year. Marines were ready in the Philippines when they were needed to provide disaster relief, to improve security for our naval and diplomatic installations, and to provide a stabilizing influence. They were ready when American citizens and foreign nationals had to be evacuated from strife-torn Liberia and Somalia. And they were ready when called upon to fight in Panama and Desert Storm.

Today, your Marine Corps is executing its legislated roles and missions. Approximately 80 percent of our operating forces are performing missions outside the continental United States. Our active and reserve Marine units operating around the world are fully-integrated fighting forces. These deployed units include 29 of our 33 infantry battalions, all of our tank battalions, and 60 of our 76 aviation squadrons. The impressive capabilities being demonstrated by this Total Force are the result of the superb planning and execution of legions of dedicated marines and sailors operating under the leadership and vision of my distinguished predecessors. Equally as important has been the leadership of our civilian and military defense leaders in the Department of the Navy and the Department of Defense. Above all, none of these capabilities and readiness would be possible without the support of the American people as reflected by the support and actions of the Congress.

Although our attention has been focused on events in the Middle East, we must make decisions regarding military strategy and force structure that will determine our Nation's military capability well into the next century. It's not an easy task to reduce defense spending and force structure in a security environment in which the only certainty is uncertainty.

INTERNATIONAL SECURITY ENVIRONMENT

For the past 45 years, our national security policy and strategy has been consistent and effective. Based on the policy of containment, our strategy was built upon the pillars of deterrence, forward defense, and strong alliances. The result was a victory in the Cold War and optimism about the prospects for peace in the future. Our optimism was short lived. The end of the Cold War did not result in a world at peace.

Recent world events have shown that a relatively stable security environment has been replaced by one of increasing instability and uncertainty. The collapse of the bi-polar balance of power will result eventually in a multi-polar world. However, during this period of transition, the world will be increasingly volatile as emerging powers attempt to take advantage of the current security environment and try to achieve hegemony in their respective regions. Trans-national political entities such as terrorist organizations and traffickers in illegal narcotics will use unscrupulously whatever means are available to achieve their ends. Terrorism against individuals, property, and even the environment will continue to be an inexpensive weapon to achieve political objectives.

Nationalism is on the rise, especially in those countries upon which the developed world is dependent for its supply of strategic resources. These nations are beginning to demand a greater share of the wealth produced by their resources and it is likely they will begin to exert increased influence on world affairs as they realize the extent of their power. This situation is complicated further by the proliferation of high technology weapons, weapons of mass destruction, and conventional weapons. In some of these areas our access to materials, markets, and bases also could be threatened or reduced. In these same regions, dramatic increases in population coupled with an increased dissatisfaction about the gap between rich and poor will be a major source of regional instability and a cause of insurgencies.

Our Nation's economy is becoming increasingly integrated within a single, worldwide economic order. This interdependence may cause conflict as existing political instabilities are exacerbated by economic disparity, increased competition for scarce resources, and growing nationalism. Our economic well-being will remain dependent upon our continued access to natural resources and world markets.

The shift from the relative certainty of the Cold War to the uncertainty that lies ahead requires that we shift from a policy of containment to a policy of stability. The goal of this policy is the creation of the favorable political, economic, and security environments needed to achieve our objectives. To be successful, we must focus all the elements of our national power toward the achievement of a single goal—worldwide stability. Our political, diplomatic, economic, and military means must be totally integrated and focused on the achievement of this goal. Our success will be dependent upon diplomatic influence abroad, political unity at home, and a credible military capability.

In light of the ongoing changes in the international security environment, we must continue the complete and comprehensive examination of our military strategy and military force structure requirements. We must develop a military strategy and force structure that will promote stability, foster collective security, and provide a hedge against uncertainty well into the 21st century. In doing so, we need a strategic thought process which recognizes that aerospace, maritime, and continental concepts are most effective when combined into a single integrated strategy.

Successful execution of a military strategy designed to assist in maintaining worldwide stability requires a flexible military force structure that possesses a wide range of capabilities and aggregate usefulness. The missions assigned to these forces will range from forward peacetime presence to sustained power projection operations. These missions will require the combined capabilities of all the components of our military force structure. This is why in the coming decade even greater emphasis will have to be placed on joint and combined operations since they provide the means to capitalize on the existing complementary capabilities of each of the services.

Each service must continue to focus on its respective roles and missions if we are to capitalize on the synergistic combat capabilities that are the result of decades of organizational focus and institutional ethos. As we debate our future force structure requirements, we should remember that the unique missions and functional capabilities of the services are designed specifically to be complementary, enabling, and enhancing. Used together, they provide us the means to generate rapidly needed combat power tailored to the mission at hand.

NAVAL FORCES

The ability to maintain influence by sustained forward presence and, when needed, to project power ashore in distant regions of the world is a fundamental capability for successful execution of a stability strategy. We believe that Navy and Marine Corps expeditionary forces will continue to provide a significant portion of this required capability. Our naval forces are already structured and, more importantly, already postured to maintain forward presence and to be the lead elements of our power projection capability in many of our Nation's regions of interest.

Today, our naval expeditionary forces are operating around the globe demonstrating U.S. interest, supporting our allies, ensuring our free use of the sea lines of communications and our access to markets, and providing an immediately available and credible crisis response capability. As demonstrated repeatedly, the presence of naval expeditionary forces, poised off the coast of a potential adversary for extended periods, can deter conflict and allow the diplomatic process to work. Should diplomacy fail, these forces can project combat power ashore with the necessary sustainment to accomplish a wide range of missions.

These expeditionary forces are a logical complement and, in some cases, the only alternative to the permanent forward-basing of land forces. Naval forces arrive on the scene with all of the inherent advantages that seabasing affords: flexibility, mobility, security, and sustainability. As a result, in many cases, naval forces are the "force of choice" for crisis response operations because of their ability to operate from sea bases without a need for host nation support, overflight rights, or aircraft and personnel bed down sites.

Future conflicts may not offer us the luxury of established air and supply bases that often have been available. Naval forces provide the National Command Authorities with a flexible response option to crises by being able to: demonstrate resolve to belligerents and regional allies; evacuate and protect noncombatants; enable the early commitment of follow-on forces by seizing strategic facilities, choke points, and airfields; or to conduct strike operations and sustained operations over the shore. And, they also may perform supporting operations such as SLOC protection, interdiction, and blockade.

Power projection will, in the most likely regions of instability, require a major maritime commitment. These operations normally will evolve from an initial presence by forward-deployed naval forces—most likely a carrier battle group and an amphibious force which includes a special operations capable Marine Air-Ground Task Force (MAGTF). This initial MAGTF could consist of either a Marine Expeditionary Unit or a smaller Special Purpose Force, since these types of forces are routinely forward-deployed to maintain influence and enhance stability in regions of interest.

As we have seen in the Persian Gulf, naval presence can be sequentially enlarged through the introduction of augmenting forces such as additional carrier battle groups, battleships, Marine Expeditionary Forces (MEFs), and Maritime Prepositioning Ship (MPS) squadrons. In addition, this initial naval presence also can be augmented by land-based forces with the sequential introduction of ground combat elements and land-based tactical aircraft.

THE CORPS

Marine Expeditionary Forces with their flexible organization, their combined-arms and amphibious capabilities, and a centuries old relationship with the Navy are ideally suited for naval expeditionary operations. Our legislated combined arms force structure of three active and one reserve division/air wing teams are organized for combat as air-ground-logistic teams called Marine Expeditionary Forces (MEFs). These MEFs, strategically located and rapidly-deployable, are our principal organization for combat and peacetime preparedness. They are reservoirs of combined arms power from which a variety of Marine Air-Ground Task Forces (MAGTFs) can be tasked organized for the mission assigned.

The MAGTF concept is based on the integration of ground combat, aviation combat, and combat support elements under a single commander. This approach allows us to tailor MAGTF in size and composition to meet the broadest range of operational requirements on short notice. All MAGTFs can possess special operations capabilities, be task organized as small special purpose forces, as light airlifted contingency forces, as amphibious assault forces, or as forces tailored to link-up with prepositioned supplies loaded aboard maritime prepositioning ships. They also can operate independently or as part of a joint task force.

In response to the present crisis in Southwest Asia, we deployed several Marine Expeditionary Brigades (MEBs) aboard amphibious shipping, by strategic airlift, and by using maritime prepositioning ships. We then combined these units into two MEFs: one ashore and one afloat aboard amphibious ships. The MEF ashore is a task organized force, specifically tailored for combined-arms warfare against a mechanized threat. The MEF afloat is task organized to conduct forcible entry operations from the sea.

Deployment Options

"Get to the fight fast with enough supplies to last"

We continue to emphasize rapid response and sustainability in all aspects of planning and execution. In the words of our 22nd Commandant, General Shoup: "Marines are ready to go any time, anywhere, with any kind of transportation and tangle with the enemy." Our expeditionary forces deploy by amphibious ships, strategic airlift, maritime prepositioning or a combination of all three means. Depending on the situation, we have the flexibility to task organize a force which maximizes the capability of each option: the utility, forcible entry capability, and endurance of amphibious lift; the capacity and sustainability of sealift; and the speed of airlift.

Amphibious Lift

Much of our Nation's ability to respond to simultaneous and multiple crises around the globe depends on the availability of amphibious shipping. In the midst of our Southwest Asia deployment, the largest naval deployment since World War II, amphibious forces were called upon simultaneously to evacuate American citizens and foreign nationals from Liberia and Somalia. These operations underscore our Nation's need for flexible, responsive, and most importantly, immediately available and forward deployed Marine expeditionary and Navy amphibious forces. We believe that our operational requirement remains unchanged: enough amphibious shipping to lift two Marine Expeditionary Forces simultaneously. This allows us to land a Marine Expeditionary Force and still retain the flexibility to meet other worldwide operational requirements. Although budget constraints will not permit us to achieve this goal, it is the benchmark for measuring the difference between requirements and capabilities.

Maritime Positioning

Ten years ago you implemented the Maritime Prepositioning Program (MPS) to complement our amphibious capability. The strategic deployment flexibility offered by MPS combines the advantages of airlift speed with sealift capacity and forward positioning to rapidly deploy Marine expeditionary forces in support of the warfighting CINCs. This program was validated in an operational environment for the first time last August in Southwest Asia. The first Maritime Prepositioning Ships arrived in Southwest Asia within a week of receiving their movement orders. As they began off-loading their cargo, Marine units from California and Hawaii, flown in by strategic airlift, were there to link up with their supplies and equipment.

All three of our MPS squadrons have been employed in the Persian Gulf. Each of these specially configured squadrons provides enough tanks, artillery, vehicles, ammunition, supplies, food, fuel, and water to support a brigade of Marines for 30 days of combat. The utility of these ships did not end with the off-load of their cargo. For example, two of the ships subsequently formed the nucleus of a floating, mobile, logistics seabase. They now provide maintenance, fresh water production, and fuel and munitions storage to the Marines in Southwest Asia. In addition, one ship has been reloaded and is providing a maritime prepositioned force capability for a Marine Expeditionary Unit. This ship is now on station in the Pacific for crisis actions.

MPS allows us to conserve the Nation's critical strategic airlift. For example, the lead element of the I Marine Expeditionary Force, the 7th MEB (an integrated combined arms task force of over 18,000 Marines) used 259 strategic airlift sorties deploying to Southwest Asia. This is modest when compared to the 3,000 plus sorties that would be required to move the same force without maritime prepositioning.

MPS was designed to complement and enhance our strategic mobility and flexibility. It was not intended to be a substitute for the forcible entry capability which amphibious shipping provides.

Two Aviation Logistic Support Ships (T-AVB) also deployed to Southwest Asia. These specially configured ships, although not part of the MPS program, provide spare parts, technicians, and intermediate maintenance facilities and equipment. They can operate either underway or pierside. Without the T-AVB, 320 airlift sorties would be required to deploy each of these intermediate maintenance capabilities.

Our amphibious shipping, maritime prepositioning ships, and the T-AVBs have demonstrated their value in crisis response. This year's operations in Southwest Asia, Liberia, and Somalia would not have been possible without these relevant capabilities.

Strategic Airlift

Marines can also deploy by strategic airlift either as part of a maritime prepositioning force operation or independently as Airlifted Contingency Forces (ACFs). Our ACFs are light task organized expeditionary forces rapidly deployable on very short notice. They can operate independently or as the lead element of a larger naval expeditionary force or joint/combined task force.

Current Operations

Today, Marines are operating throughout the world. The events of the past year highlight the global capabilities and flexibility of the Marine Corps. The deployment of Marines to Southwest Asia and simultaneous operations in Liberia, the Philippines, and Somalia highlight the important contributions Marines make to our Nation's security. The initial deployment of Marine units and the subsequent linkup with their equipment provided the first credible task-organized, anti-armor, combined arms force during the early stages of the crisis. As the presence grew from 40,000 in late October to over 90,000 Marines today, so did our capabilities. These Marines, specifically task organized for Desert Storm, formed two MEFs.

The expeditionary force ashore, in essence a Marine Expeditionary Corps, consists of two reinforced Marine divisions, one Army armored brigade, four Navy construction battalions, one reinforced Marine aircraft wing, and two Marine force service support groups. The MEF afloat consists of about 18,000 Marines aboard amphibious ships. We tailored these two MEFs to accomplish a wide range of missions with units derived from all three of our Marine Expeditionary Forces and our Reserve Division/Wing Team. This was possible because of our organizational focus on sustained, task organized expeditionary operations and the flexibility and aggregate usefulness of our existing force structure.

In Operation Sharp Edge, Marines responded to the crisis in Liberia. Upon receipt of the NCA tasking, we organized a Special Purpose Force from our forward-deployed Marine Expeditionary Unit in the Mediterranean, embarked it aboard a Navy destroyer, and deployed it to Liberia. A few days later the amphibious ready group with the remainder of the Marine Expeditionary Unit, Special Operations Capable (MEU(SOC)) arrived. These sailors and marines remained on-station for more than 6 months and evacuated over 2,400 American citizens and foreign nationals from the war-torn capital of Monrovia. The evacuation began as Marines were deploying to Southwest Asia for Operation Desert Shield. As the crisis in the Gulf intensified, American citizens threatened in Mogadishu, Somalia required evacuation. Two amphibious ships detached from the task force operating in the Persian Gulf and steamed toward Somalia. Four hundred and sixty miles from Somalia two CH-53E helicopters loaded with a Marine Special Purpose Force were launched from amphibious ships. The helicopters were refueled twice enroute at night by Marine KC-130 tankers, and arrived in time to safely evacuate American citizens and foreign nationals. Mission accomplished and helos back aboard, the ships steamed back to the Persian Gulf and are again engaged in Desert Storm.

When the war began in Southwest Asia, your Marines were ready in the air, on the land, and at sea. They were integrated fully in the CINC's command, control, communications, and intelligence command structure. Their execution of assigned combat missions was superb. The unique flexibility, combat capability, and sustainability of your Marine expeditionary forces were demonstrated throughout the campaign. In the air, Marines flew over 17,000 sorties in support of both the CINC's strategic air campaign and ground combat operations. On the land, your Marine Expeditionary Corps when given the order to execute its assigned mission rapidly advanced to engage the enemy and seize assigned objectives. As they advanced to their objectives, they destroyed or captured over 1,000 tanks, over 600 armored personnel carriers, and over 400 artillery pieces. At sea, your amphibious forces continued to interdict the enemy's sea lines of communications as well as being poised to launch an assault from the sea at a moment's notice. Their very presence off the coast created confusion among the enemy and caused them to dedicate significant resources and forces to defend their coastal flank against an amphibious assault and/or vertical envelopment. In executing their assigned missions, your Marines performed with courage and distinction—as did all of the U.S. and coalition armed forces. However, it should be noted that none of this would have been possible without the superb performance of the soldiers, sailors, airmen, coast guardsmen, marines and civilians assigned within the supporting establishments.

Additionally, since 1989, Marine expeditionary forces have maintained a continuous presence in the Philippines. These forces, drawn from III MEF forces forward-deployed in Japan, are providing protection for our citizens, interests, and naval installations.

Counternarcotics Support

We have supported strongly the President's National Drug Control Strategy as an integral part of the DOD effort to combat the importation of illicit drugs at their source, in transit, and within the United States. At the source, we are conducting training in riverine operations and providing mobile training teams to various Latin American nations on the front line of the drug war. We have deployed a Tactical Air Operations Center which provides air surveillance radar coverage in Latin America in support of the Southern Command. Additionally, we provide personnel training and operational support to the Drug Enforcement Administration. We also conducted continuous OV-10 maritime detection and monitoring missions in the Caribbean Sea and the Atlantic Ocean until August of 1990. Within the United States, Marine ground surveillance operations and other special operations are continuing along the southwest border. Further, Marines continue to conduct law enforcement operations along the California coast by providing surveillance of inlets that are potentially usable for drug smuggling.

We have not neglected the home front in our fight against illegal drugs. We are helping community leaders in their efforts to rid their neighborhoods of illicit drugs. These efforts include role model and education programs at grade and high school levels as well as efforts with community youth activities to offer positive alternatives to drugs. And we have been at the forefront in providing rehabilitation-oriented training to State and local corrections officers. We continue to assist the local enforcement agencies in developing leadership and motivational techniques for use in turning around the lives of young drug offenders.

Right Force . . . Right Focus . . . Right Capabilities

Our ability to respond to several crises simultaneously while maintaining worldwide presence underscores the need for a Marine Corps of three active MEFs. Three MEFs provide the capability and flexibility needed for global operations. Our balanced MAGTFs with fully developed air-ground and logistics elements allow us to respond to a 60-day crisis without reserve call-up. Although our reserves are not relied upon for our initial response to crisis, they provide a critical sustainment and reinforcement base for extended operations beyond 60 days. As the Nation's expeditionary force-in-readiness, Marines arrive ready to fight with the sustainment necessary to accomplish the mission at hand.

Service Planning

Conventional deterrence, protection of American citizens, security of critical installations, and warfighting are just four of the missions Marines are accomplishing today throughout the world. These contributions are the result of a deliberate and comprehensive service planning process that addresses all aspects of our training, education, doctrine, and equipment. Our service planning process is charting the future course of your Marine Corps. It has guided the response of the Marine Expeditionary Forces in Southwest Asia, and contingency responses in Liberia, Somalia, and the Philippines.

Although the Marine Corps has significant capabilities, improvements in our expeditionary capabilities must continue. We have developed and continue to refine the three plans which will guide our Corps into the next century. The first, the Marine Corps Campaign Plan, provides a common direction to the Fleet Marine Forces and the supporting establishment. The second, the Marine Corps Long Range Plan, projects the long term security environment as well as the concepts, capabilities, and goals needed to meet the challenges that are 10 to 20 years into the future. The third, the MAGTF Master Plan, focuses on operational concepts and requirements through the year 2000. This master plan places an increased emphasis on revolutionary warfare and regional conflict. By incorporating the goals outlined in the long-range plan into our master plan, we are able to establish and identify the priorities for developing our mid- and long-range operational requirements.

Research, Development & Acquisition

Our primary research, development, and acquisition goals are aimed at enhancing our multi-mission capable forces and further developing an over-the-horizon assault capability. Every equipment modernization decision supports these goals. The key thoughts are mobility, flexibility, speed, and significant combat advantage. Several systems currently under development will help us meet our goals.

Aviation Combat

Recent events have reemphasized the critical need to replace our medium assault lift helicopter fleet. Operations in Southwest Asia, Liberia, and Somalia underscore the vital necessity for a medium assault lift capability that includes increased speed, range, survivability, payload, and the subsystems required for precision navigation at night and in adverse weather. Today, Marines are operating in a combat environment that pushes the CH-46 to the edge of its operating limits. If production started today on its replacement, the CH-46 fleet would be more than 40 years old by the time the last aircraft retired. While we are sensitive to the current fiscal environment, advances in surface-to-air munitions have placed this airframe and the Marines that it carries at risk. The process of evaluating the medium assault lift requirement and selecting alternatives is ongoing. However, we have reached the point where we can no longer afford to postpone the decision to replace the CH-46.

To meet our other operational requirements, we have requested procurement of AH-1W, CH-53E and F/A-18 aircraft. This continued force modernization is essential to our future warfighting capabilities.

We continue to pursue evolutionary enhancements to the capabilities of our aircraft. We are especially interested in improving our ability to conduct night and adverse weather operations from over-the-horizon. The achievement of these capabilities remains a crucial warfighting requirement. Our programs are structured to capitalize on mature and proven technology that requires a minimum investment in RDT&E and procurement.

Our AH-1W Night Targeting System is a critical warfighting requirement. We are planning to procure 18 systems during fiscal year 1992. Further, we expect delivery of the precision navigation systems for the AH-1W to begin this year. We are also in the process of standing up our second squadron of Night Attack Harriers. Equipped with a forward looking infrared radar (FLIR), night vision goggles, and a cockpit optimized for night operations, the Night Attack AV-8B provides for around the clock operations. Additionally, our fiscal year 1991 AV-8Bs will be radar equipped to provide an air-to-air capability.

We also have enhanced our overall night and all-weather capabilities by the modernization of our F/A-18A aircraft to F/A-18Cs and the transition from A-6Es to F/A-18Ds. Our first F/A-18D squadron is currently deployed to Southwest Asia. The transition of a second squadron of A-6Es to F/A-18Ds is underway. The addition of FLIR and a night vision device will measurably improve our night attack capability. The continued addition of other improvements will provide our F/A-18Ds with an all-weather targeting capability. We also have translated lessons learned during operations in Southwest Asia into improvements in our night fighting tactics, our use of electronic countermeasures, and our ability to navigate in combat.

We seek new procurement only when modifications are not practical. We have further reduced operating costs and increased the commonality of our force by retiring three older Type/Model/Series of aircraft from our inventory. Our goal is to reduce the types of aircraft in our inventory with no loss of capability.

Ground Combat

The Advanced Amphibious Assault (AAA) program remains our primary developmental research effort. The AAA will provide the high speed movement of the surface assault forces from ships beyond the horizon to inland objectives. The final product of the AAA program will complement the Navy's Landing Craft Air Cushion (LCAC) and our medium assault lift aircraft in improving dramatically the forcible entry capability and tactical mobility of our expeditionary forces.

We will add the LAV Air Defense variant to our family of Light Armored Vehicles and will continue the research and development of an assault gun variant. Concurrently, we continue to improve communications interoperability with all U.S. and allied military forces. Several systems will help fulfill this communications requirement: the Marine Air Command and Control System, the Joint Service Imagery Processor, the Marine Tactical Command and Control System, and the Single Channel Ground-to-Air Radio System. These systems, in combination with other programs, will improve dramatically our ability to exchange secure, near real-time tactical information in joint and combined operations.

Whereas equipment is a vital necessity to any military organization, nothing is possible without our greatest asset—people. Our deployment to Southwest Asia and the subsequent buildup of supplies and equipment is a tribute to the quality of our young men and women who make the whole system work.

PEOPLE . . . OUR MOST PRECIOUS RESOURCE

Operation Desert Storm has clearly proved the efficacy of the Marine Corps' Total Force Policy. Today, more than 80 percent of the Fleet Marine Forces and 50 percent of the Selected Marine Corps Reserve are deployed side-by-side outside the Continental United States. Their combined performance reaffirms the wisdom of building our Total Force with quality Marines—highly trained, educated, and prepared!

Recruiting

Our Total Force has been strengthened by the recruiting successes of the past 3 years. More than 95 percent of our accessions were high school graduates with over 67 percent scoring in the upper three Armed Forces Qualification Test Categories. These achievements provide the Marine Corps with responsive, highly motivated, and intelligent Marines. As amply demonstrated by recent events, these young Americans give us the kind of quality we need to man a force capable of dealing with an uncertain world situation.

As we proceed into the 1990s, we will continue to seek out the same high quality young Americans. Successful recruiting is a combination of articulating the challenges of being a Marine, providing recruiters with the advertising resources to get the word out, and raising compensation levels enough to attract the quality individual we seek. A smaller, more elite Corps will demand that every Marine be multitalented. Changing demographics and increased competition for America's youth will make our search for quality more difficult. Helping our recruiters succeed will require adequate funding for our recruiting and advertising programs.

Retention

The success of our recruiting program is mirrored by impressive successes in our retention programs. We are especially proud that the Marine Corps surpassed its overall reenlistment goals for fiscal year 1990. In achieving our retention goals the Marine Corps has improved unit cohesion, increased unit stability, and lowered training costs. In this way, retention programs provide a very high return on recruiting and training investments. The Selective Reenlistment Bonus Program is one of the most important factors contributing to our success. Its continued funding will be important to the future of your Marines.

Force Structure

In the midst of an exceptionally busy operational period and despite mounting tensions throughout the world, we are preparing to reduce our end-strength. I must emphasize that these reductions will have a disproportionate impact on our operating forces: the Fleet Marine Forces, Marine Security Forces, Marine Support Battalion (Naval Security Group), and the Marine Security Guard Battalion. Our training and supporting establishments are extremely lean cost and effective. Strength reductions will, therefore, have the greatest impact on our operating forces—the forces called upon to do so much in an uncertain world.

The years ahead will challenge our leadership, imagination, and creativity in ways we had not heretofore experienced. We must preserve our readiness and warfighting capability as we reduce the size of a force expanded by the demands of the present crisis. My primary concern is that we remember the loyal and dedicated service of the Marines who are doing what must be done in Operation Desert Storm. Any "drawdown" must be fair to all Marines, take advantage of the new reduction authorities you have provided, be equitable, and respect the dignity of our Marines and their families.

Quality of Life

Our family service centers are important to our Marine Corps family. There are 18 Family Service Centers located in the United States and overseas. The demands on these centers have increased steadily over the past 3 years. For example, there have been over 350,000 contacts during the past fiscal year, a fact that underscores the Family Service Centers' value to our Marines and their families. In addition, the demands on our Child Development Centers have increased dramatically. Additional support in these areas will be required if we are to fulfill the needs of our Marine family.

Anticipated manpower reductions will also test many of the programs designed to help Marines transition from military to civilian life. For instance, Marines with good service records who are involuntarily separated after 6 years but less than 20 years of service will receive separation pay. Other programs that you have supported and sponsored through the Transition Assistance Management Program will also ease the transition to civilian life.

Reserves

Desert Storm's smooth integration of Reserve combat, combat support, and combat service support units into the active forces has proven the viability of our integrated training and exercise programs. Our reserve forces are a key component of our warfighting capability. For example, reserve Marines are assuming several active force missions by providing the majority of forces for Exercise Battle Griffin—a Northern Region NATO exercise. They are also participating in Exercise Team Spirit in Korea, Exercise Ahuas Tara 91 in Honduras, and Exercise Solid Shield within the Atlantic Command. Additionally, the 4th Marine Division has assumed I Marine Expeditionary Force's drug interdiction mission in support of Joint Task Force 6 along our Southwest border.

Retirees

Our retirees continue to prove the maxim, "Once a Marine always a Marine." In recent months I have received hundreds of phone calls, letters, and visits from retired Marines asking to return to active duty to support our efforts in the Persian Gulf. The spirit embodied in these warriors remains the foundation upon which we continue to build our Corps of the future. For example, many of our retired Marines take an active role in our Professional Military Education programs. We are not ignoring this important resource and we continue to support fully the programs upon which they rely.

Civilians

Our civilian employees are critical to our success. They are strategically placed in our supporting activities to help us keep Marines in the operating forces. This is why reductions to our civilian structure must be carefully considered.

TRAINING & EDUCATION

Our Nation's military capability is enhanced by a Marine Corps prepared for battle by demanding and comprehensive training and education programs. These programs have institutionalized the qualities that have made Marines what they are. Your Marines are taught not only combat skills but, more importantly, they are taught to out think any opponent and to seize and maintain the initiative. This is a testimony to our combat-oriented Marine Battle Skills Training which is designed to develop and sustain basic combat skills throughout a Marine's career.

Our Professional Military Education (PME) program develops innovative, thinking leaders. It encompasses professional self-study that includes correspondence courses, professional reading, symposia, and formal schools. Our educational programs are designed to assist all Marines in their personal growth within the profession of arms. For example, our Non-Commissioned Officers participate in a continuous program of PME. At each level in their career our NCOs are studying the profession of arms either at school or in the field. Quality small-unit leadership has always been our trademark. Our PME program will ensure the tradition continues.

The Marine Corps University, founded in 1989 and located at Quantico, is responsible for developing and coordinating PME throughout the Corps. This includes resident and non-resident PME for both active duty and reserve Marines. The resident schools of the Marine Corps University include the NCO schools, Staff NCO Academies, The Basic School, Communications Officers' School, Amphibious Warfare School, and Command and Staff College.

Our School of Advanced Warfighting, a year-long extension of our Command and Staff College, will better prepare officers for key positions in high-level joint and combined staff billets. The Art of War Studies program is part of our current effort to upgrade the quality and depth of the Marine Corps University faculty. A handful of select senior officers spend a year studying advanced issues in strategy and the operational art. The graduates of this top-level school will then serve 2-year tours as faculty members at the Marine Corps University. Progress is also being made on the University's planned research facility. It will be a comprehensive facility that will provide related research services for the analysis and study of expeditionary and amphibious warfare.

The worth of our training and education philosophy and programs was again proven during Operation Desert Storm. Our combat leaders, at all levels of command, were able to rapidly identify and exploit enemy vulnerabilities and to shatter the enemy's cohesion through a series of violent and unexpected actions that created a turbulent and rapidly deteriorating situation with which he could not cope. This is the essence of our maneuver warfare philosophy, the thought process which we believe essential for any air, land, and sea campaign to be successful.

SUSTAINING THE FORCE

Perhaps the most noteworthy achievement during Operation Desert Shield was the rapid deployment to Southwest Asia of a credible, task organized combat force with an organic sustainment capability. A fundamental characteristic of naval forces is that they deploy with an adequate level of sustainability. As a policy, our MEFs deploy with 60 days of supply.

Operations in Saudi Arabia have proven our ability to sustain our forces. We committed over 80 percent of our operating forces and a larger percentage of war reserve stocks to meet the requirements of this contingency. Without our logistics depth, acquired through years of persistent programming efforts and your consistent support, our rapid build-up of needed combined arms power in Southwest Asia may not have been possible.

The Marine Corps did not develop this logistics capability without costs. In the process of achieving a force with balanced ground, aviation, and service support forces we insisted that organic sustainability be maintained in spite of a strong pressures to try and gain "tooth" at the expense of "tail." As a result our combat service support is in our active force structure and we will continue to maintain a "tooth" to "tail" ratio consistent with a truly expeditionary force.

The kind of logistics capability demonstrated during Desert Storm is critical to our Nation's military capability. Decisions in the post-war era, when resources are scarce, will be difficult. However, we now must reconstitute our sustainability and our MPS capability to meet the next crisis as quickly as possible. We must move many Marine units, and their equipment over long distances by land, by sea, and by air as our warriors redeploy, reconstitute, and come home. We will execute this redeployment as we always do; smartly, tactically, by echelon, always prepared for crisp response, and—above all—safely. The unfolding nature of world events will not allow us the luxury of taking our time to prepare for the next crisis.

THE FUTURE

There will always be those who will continue to make the mistake of underestimating the resolve of the American people. They will persist in challenging us along littorals and in the rapidly-expanding urban centers of developing nations, many of which have experienced extraordinary population growth and thus face suddenly-released national, ethnic, and economic aspirations. These factors will combine to generate new frictions, renew old feuds, and contribute to instability.

Such circumstances dictate that as our Nation moves into the 21st century we face the challenge of determining the right mix of military capabilities based on need and affordability. Fortunately, the foundations of our military requirements are in existence today. In particular, our Nation will continue to require a Navy and Marine Corps of sufficient size, quality, and ability to ensure freedom of the seas and the projection of power to maintain peace and stability wherever United States national interests may be.

We believe that your Marine Corps is ready for the challenges that are ahead. We will continue to provide the Nation with the highest possible return on its defense investment. Our strengths will remain versatility, readiness, and aggregate utility. Operating with the other services, we will continue to provide the Nation with a competitive advantage of unmatched usefulness. And we will overcome whatever challenges are ahead with a degree of excellence on the part of Marines, regular and reserve, expected by the Nation and demanded by our traditions. No Commandant could ask for more, nor report to you, the representatives of the American people, with greater pride. As always the Marine Corps is grateful to you for your loyal support. Your Corps stands ready and prepared to do what must be done!

Our request for fiscal years 1992/1993 is as follows:

[Dollars in millions]

Appropriation	Fiscal year 1990	Fiscal year 1991	Fiscal year 1992	Fiscal year 1993
Military personnel, Marine Corps	$5,799	$5,912	$6,067	$6,101
Reserve personnel, Marine Corps	314	337	327	330
Operation and Maintenance, Marine Corps	1,851	1,890	1,895	1,740
Operation and Maintenance, Marine Corps Reserve	78	85	76	75
Procurement, Marine Corps	1,100	690	1,039	651

Appropriation	Fiscal year 1990	Fiscal year 1991	Fiscal year 1992	Fiscal year 1993
Family housing, Marine Corps allocation	151	133	131	113
Military construction, Marine Corps projects	162	139	95	153
Military construction, Marine Corps reserve projects	16	9	5	3
Stock fund, Marine Corps	26	0	0	0
Total	$9,497	$9,195	$9,635	$9,166

Chairman NUNN. Thank you, General Gray. Let me use my time to ask you each the same question, and that is, what worked well. General Gray has gone through that. General Vuono touched on it, and Admiral Kelso. But in terms of equipment and technology, what would you list as having worked well that we will be emphasizing in the future, and a second question is where are our deficiencies that you have taken note of during this war—deficiencies that come to mind that we need to work on? General Vuono?

General VUONO. Well, Mr. Chairman, as both General Gray and others have touched on, the systems worked extremely well. I prefaced my remarks by saying good soldiers make good equipment work, and we had both.

In the case of specifics, the M-1A1 tank performed superbly, as did the Bradley Fighting Vehicle. Our Army aviation systems, the UH-60, Blackhawk, the OH-58D and the AH-64 Apache, performed superbly. Their operational ready rates, particularly the Apache whose effectiveness had been questioned before, during, and after the operation, were outstanding.

In the artillery systems, we had great capabilities with the MLRS and with the ATACMS. We also had tremendous success with the Hellfire missiles and the Copperhead. The HEMTT—a truck is not a very sexy piece of equipment—but it certainly paid off tremendously in the Gulf. We were absolutely delighted we were able to deploy the JSTARS. It worked extremely well both for mobile and fixed targets. Talking to commanders and soldiers, our preliminary results indicate that these systems performed very, very well, and we are very pleased with them.

Regarding shortcomings, the first two I am a customer for. I would like to have had the C-17 aircraft for this operation, just as I have spoken before for the C-17. Obviously, we are also doing a great deal of work on sealift, and I would be remiss if I did not say how pleased we were with what we did in sealift. But I would also say we need additional sealift to move the force. When you have less forces forward-deployed and more forces that you want to deploy from CONUS, you need the necessary lift to do that. Third, in terms of Army systems, I would have liked to have had in our hands the new man-portable, anti-armor system that we call the AAWS-M (advanced antitank weapon system-medium). Those are the three basic systems that, if I could wave a magic wand, I would like to have.

Chairman NUNN. Thank you. Admiral, the same question. What worked well? You have already touched on it, but just sort of a list of what worked well and what the deficiencies are we need to work on.

Admiral KELSO. Well, I think all of our basic equipments—ship platforms, aircraft—worked extremely well. We had very few ships that had casualty reports sent in. Our airplanes operated at generally better than a 90-percent mission-capable rate throughout the period, which means we had the spare parts and support, the technicians and all, to make that work. A majority of our weapons worked well. I was particularly pleased with what I have seen so far of the Tomahawk. It was the first time we had ever used the cruise missile in combat, and it appears from everything I have seen so far to have worked very, very well.

Obviously, we had some problems with mines. We are working on minesweeping and building up our capability there. It is a tough job any time you have to do it. They laid a lot of mines and we are going to be over there for some time sweeping mines. I do not think there is any way to avoid hitting one every now and then. The ships that did hit mines, their damage control was extremely well done. We did not lose a soul. We had a few sailors badly injured, but we did not lose anybody, and both ships look like they will be repaired and come back under their own power all right.

We found problems in areas of interoperability communications, much of which we were able to fix before we went into conflict here, but there are still some areas that we need to fix. For example, we need to get the same system that the Air Force uses to pass their air tasking orders. We know how to do that now, and we will take those sorts of issues on.

I think we will learn several things like that as we review the lessons. But I think, in general, most everything has worked as we expected it to, Mr. Chairman.

Chairman NUNN. What are you going to emphasize on the minehunting? What is your point about that?

Admiral KELSO. Mine-hunting ships, plus I think perhaps there are some other ways that we can look at using remote vehicles to look for mines—ways that we have not paid as much attention to—not only to look for them but to destroy them. We are using two or three systems out there now that we have bought or borrowed from some of our allies to see how they work. So we will continue to look at some of those new ideas. We are, as you know, buying 12 minehunters.

Chairman NUNN. I am going to be at the dedication of one of them down in Georgia on Saturday. General McPeak.

General MCPEAK. Sir, in general I think I would subscribe to the remarks of my colleagues. Just about everything worked well.

On our major systems, especially the aircraft, we maintained very high in-commission rates throughout and still do today. We are flying 400 sorties over there today, which is way down from our max, but is still a sizable effort. Our in-commission rate today is over 95 percent on all systems in the theater. We did that not just by bunching our muscles and sending all our spare parts to Desert Shield/Desert Storm because our in-commission rates on aircraft deployed worldwide have also stayed high throughout this entire period. But in particular in the Persian Gulf our sortie rates were on the order of twice what we normally fly, and our average sortie durations were again on the order of twice what we normally fly.

So we really used the equipment at a very high op tempo, and it performed well.

Of course the story of the Stealth fighter, the F-117 is, I think, well understood by everybody. It flew a disproportionate fraction of the sorties from the standpoint of target coverage. It was the only aircraft really tasked to go into downtown Baghdad, where the SAM and AAA defenses were particularly thick. I think we all understood that Stealth aircraft, just like Stealth boats, just like the submarine when it came along, has the potential to revolutionize warfare. So it is a whole new ball game and the combination of Stealth and precision-guided munitions is particularly impressive.

Our prepositioned equipment worked well—the tents and the kitchens. This is all rather unglamorous, but quite frankly we could not have gotten there without that. We have about $1 billion of prepositioned equipment that we purchased pre-war, and I suspect we will have to replace on the order of 25 percent of it when we come out of this. But it worked very well and we need to make that replacement.

Joint Stars, as General Vuono has indicated, went over. It performed magnificently. I do not think we ever want to have another dust-up like this without a JSTARS-like system and the beauty of it is not just that it gives you real-time intelligence about movers on the battlefield but that the airmen and the ground commander have an identical view of what is going on out there, so that they have a shared sense of what needs to be done next. So it is very good in underscoring the combined arms operation and creating consensus on everybody's part about what is important.

Finally in the what happened well category, this was the first space war in a lot of ways. I have not seen much said about that, but it is very difficult to imagine how this war could have been conducted without the assets in space, without CNN broadcasting real-time from the Rashid Hotel balcony, telling us that a building down the block was under attack.

But that is just one example. All of the space systems, which played a part in the great SCUD chase, the communications and so forth, all of these assets were lashed together in a way which I think it is not an exaggeration to say this was the first space war, first true war of the space age.

In the deficiencies column, I do believe that the C-141 is getting tired. It has been used very hard. This was the largest airlift in history, no doubt about it. As you know, we did the equivalent of a Berlin airlift every 6 weeks, and we continue to do that as we move our forces back. So we have used a lot of C-141 life and we simply need to get on with the lift replacement aircraft, the C-17.

Also, we had a problem with weather. As far as Air Force records go back, which is only 14 years, this is the worst weather we have had in 14 years. It could be the worst weather we have had in a century, for all we know. And we had a problem with PGMs. That is, we brought an awful lot of them back. Our rules of engagement required that the aircrews really positively identify the targets. The President was very worried about collateral damage. So we brought back an awful lot of munitions where the aircrew had any doubt, and mostly that was a function of weather obscuring the target. We need to work on precision-guided munitions that we can drop through weather—radar guidance or some kind of guidance that does not require eyeball contact with the target.

Another deficiency we have is night close air support. We attacked some of our own vehicles. We were responsible for killing some of our own guys on the ground, Marines and British soldiers. We are deeply sorry about that, and we simply have to do better on night attacks. It is not an easy problem. We work it all the time. But we, by golly, are going to get better at it if we have anything to say about it.

And finally, because it was the first war of the space age, I think we need to pay a little attention to what we are doing out there, especially advanced warning systems for ballistic missile attack, and the communications satellites. We need to worry about the tactical capabilities that we put up on MILSTAR and so forth. So all these will be in the kind of deficiencies category. Thank you, sir.

Chairman NUNN. Thank you, General. General Gray, you have already touched on this, but I would like to get your summary.

General GRAY. Sir, as we mentioned, the LAV performed superbly. However, to fully capitalize on its potential, we need to continue our efforts to get both the air defense and assault gun variants into LAI battalions. While these battalions were able to get behind the Iraqis a number of times and disrupt their cohesion, destroy their equipment, or capture their people, had we had the heavier firepower provided by the assault gun, it would have been a much better situation.

I mentioned the AV-8B. It was superb. However, we must continue efforts to field a true night system for the AV-8B, and to take advantage of offshore interest in this platform and its systems as well.

One real weakness highlighted during Desert Storm/Desert Shield was the lack of timely, tactical aerial imagery to satisfy the needs of air battlefield commanders. This weakness manifested itself primarily during Desert Shield—the planning phase of the operation. Most aerial tactical reconnaissance capabilities have been phased out. We had one good Air National Guard tactical reconnaissance of squadrons in theater, but because we had allowed this skill to strategy, we had to beef up the photointerpretive capability to take advantage of it. The bottom line is we did not have the type of imagery that we should have had, especially early in the operation.

Signals intelligence, tactical signals intelligence throughout the operation was superb. The overall signals intelligence effort was as we have come to expect, but the tactical exploitation of enemy signals at night during critical times in the battle was instrumental to our success. Both our ground and airborne efforts were outstanding. I think we must continue to selectively upgrade signals intelligence systems so that they can handle whatever type of hostile signal environment we face in the future.

As many of you are aware, the maritime prepositioned force was a great success story. What you may not know is that the utility of the MPF ships does not stop when they are off loaded. During Desert Shield, we back loaded some maritime prepositioned ships and used them as mobile logistics bases. The ships also served as floating water tankers, able to pump 965,000 gallons of water a day ashore. TAVBs provided us with an afloat maintenance facility fully equipped to keep jet aircraft operational—and helicopters a real plus. The investment in hospital ships and related float medical support was also money well spent.

Our reverse osmosis equipment was a big success. It worked extraordinarily well. We had 282 units employed in eastern Saudi Arabia, with very fine results.

One of the stars of the show was the remotely-piloted vehicle. The RPVs simply worked great. We employed all three of our RPV companies in Saudi Arabia, and we had two Navy detachments on each of the battleships. During the night attack on the Kuwait International Airport, Col. Carl Fuford, the Commander of Task Force Ripper, had a RPV video module in his command vehicle. He was able to watch the Iraqi reaction to our armored forces, to our artillery, and to our maneuvering in real time. It was extraordinarily successful.

We need to push on in this area. Our current RPVs are very fragile systems. I think we need to develop a more wholesome RPV capability and get more low-cost RPV systems in the field. I underline low-cost. If we have a lot of bells and whistles on them, we will get priced out of the market. So we need to think this through very, very carefully.

As far as anti-armor systems are concerned, the Hellfire has been mentioned. The TOW–II systems worked fine. We had a cook and a motor transport chief each take out an enemy tank with the AT–4, our new shoulder-fired infantry anti-tank weapon. Your support of the infantry program here on the Hill was instrumental in getting the AT–4 in the hands of the marines. I am going to have to stop giving the committee kudos here or you will get carried away. But your support for this kind of anti-tank capability has been important.

Beyond equipment, it seems clear that our warfighting, our concepts, and the thought processes that go into the air-land-sea battle and our new maneuver doctrine made the difference in Desert Storm. Any military plan of this magnitude is going to include an air, a sea, and a land campaign, and a comprehensive deception plan. But it was the systematic application of our strengths against Iraqi weaknesses—at all levels of war—which led to our resounding success with so few casualties.

Our amphibious forces performed as we always expect them to, and they did superbly well. They tied up six Iraqi divisions by their presence just over the horizon, and they were fully ready to join the battle if need be. They could have made any one of seven different amphibious assaults to commit, if you will, General Schwarzkopf's strategic reserve. The credible threat of our amphibious assault tied up over 1,000 artillery pieces and armored systems. Marine assault forces fully prepared to go deep inland along the Al-Fao peninsula, cut off al-Basra, or go all the way to the Iraqi-Kuwaiti border. That type of flexibility was a big plus in the campaign.

The landing craft air cushion performed extraordinarily well in all of our deception operations, and in earlier operations with our allies in the region.

I want to say a word about artillery. The artillery was good, as it always is. In my view, the MLRS is a super system. I do not know whether we will ever be able to afford it in the Marine Corps, nor do I know if that is necessary. Since the Army has that capability, we need only to be able to draw upon Army expertise and support when the time comes. However, we do need to do something about some lightweight artillery. The 105 Howitzer has been around a long time. If we are truly going to have a flexible contingency force in the future we need modern lightweight artillery to support it. I think that this is well within reason both in terms of technology and the budget.

The deception plan that included marine amphibious forces was part of a strategic effort. However, we'd like to emphasize that there was also a lot of tactical deception on the battlefield—and we learned some great lessons as a result. We know from our study of a number of captured enemy diaries that everything we wanted the Iraqis to think was going to happen on that battlefield was accepted, including the location of where we were, their reaction to the artillery raids, and our plan of attack.

The breaching operation was superb. To accomplish it, we moved a lot of breaching equipment into the theater. We essentially created a battalion-size task force for breaching operations. To give it the equipment needed for the job, we brought in some towed assault bridges and we borrowed or bought whatever engineer equipment was available.

In my judgment, we need to continue to have a pool of the right kinds of engineer equipment to continue to do these types of operations. We put in 29 separate equipment systems for this breaching operation.

There is an important aspect to breaching beyond the equipment issue. In the final analysis, the speedy breach was made by Marine reconnaissance and infantry people infiltrating on foot, getting in behind the Iraqi lines and pulling our forces through the gaps that they found in the Iraqi defenses. Although equipment played a big role, people are the reason why we were able to do it as fast as we did.

I think we could have made better use of deep reconnaissance and that type of activity throughout the theater. We will have to wait for the lessons learned process to take place, but I am not sure that we exploited that capability as well as we should have. Of course, lessons learned do not cost any money. There is no hardware involved.

Chairman **Nunn**. General, I hate to cut you off there, but my time has expired. Let me move on to Senator Warner and I will waive my next round.

Senator **Warner**. Mr. Chairman, those are important questions. I just want to pick up on one quick thing with the Commandant. The U.S.S. *Wisconsin* battleship is due to return to Norfolk next week. What did you think of the performance of that ship? She is liable to go dockside, tie up, and never sail again unless we get something moving here in Congress. Let the Commandant fire the first salvo.

General **Gray**. You are doing fine, sir. That is right. The loss of the battleships is a great concern because we have very limited naval gunfire-type capability and they have been marvelous platforms. They are particularly well-suited, in my judgment, for all-weather fire support in mid and low intensity types of conflict in the future. It is a great resource and the Marine Corps is sorry to see this capability leave the inventory.

Senator WARNER. Well, it has not left yet.

General GRAY. So noted.

Senator WARNER. And I talked to both your 1st Division and 2nd Division commanders, as well as General Boomer, and that ship performed specific missions, used the RPV, and greatly assisted both the 1st and 2nd Divisions in their sectors. Am I not correct?

General GRAY. That is absolutely correct, sir.

Senator WARNER. Fine. Do you want to comment, Admiral Kelso?

Admiral KELSO. Sir, I agree the ship performed admirably. It is the only capability for naval gunfire support of that nature we have in the Navy. It is a superb ship.

Senator WARNER. And she proved it in this mission?

Admiral KELSO. Yes, sir.

Senator WARNER. Let me return to the line of questioning that I wish to initiate, and that is that as we evaluate the early pronouncements of the administration with respect to the future, it appears that we are gravitating toward a strategy, post-Gulf military operation, of augmenting our Air Force—that is, our air units in that area, both land-based and sea—and also our sea-based assets. For the ground forces, in my understanding, General Vuono, we would not have a permanently-based ground force of any sizable nature—maybe some associated with prepositioned property and POMCUS and so forth—but that we would go to an emphasis on exercises. Why don't you lead off as to what you perceive as the threat in the future in the Gulf region, General Vuono, and how we should best configure our land forces to meet that threat, given the political, economic, and other factors.

General VUONO. Well, it seems to me, Senator, that there is a broader question than just the Gulf. The real issue is the refining and reshaping of our forces to meet the entire military strategy, which is moving from a strategy based on containment of the Soviet Union to one based on force projection capability. We are going to reshape our forces—we are in the process of doing that—to meet that requirement.

Specifically, in the Gulf, as you know, that plan is still evolving, and we have not yet settled in on exactly what it is going to be. My view would be that prepositioning some equipment over there—and again, we are working with the theater commander to determine what that requirement ought to be—but some prepositioning on the ground, and then exercises into that area to allow us to, one, exercise our forces in that area on the ground and two, to exercise our deployment capability from outside the theater into that area. I think that would make a lot of sense not only in terms of our ability to exercise, but in terms of providing stability.

Senator WARNER. But I judge that you concur in the initial decision not to have permanently-stationed forces there. Your evaluation of the threat today and for the foreseeable future is such that that is not a necessary element?

General **Vuono**. Yes. I do not look to see ground forces having to be permanently stationed there.

Senator **Warner**. U.S. forces. And that we should rely more and more on the Gulf states to generate their own ground force element; am I not correct?

General **Vuono**. It seems to me that that would be the best way.

Senator **Warner**. Augmented perhaps by Egyptian and even Syrian forces.

General **Vuono**. At this stage of the game I would not want to be pinned down as to what the forces ought to be, but I do not think a permanent U.S. ground force presence over there is the way we want to go in the future.

Senator **Warner**. Admiral Kelso, for years we have had the naval facility at Bahrain. How would you recommend to the President and others that we now expand the facilities in the Gulf region, and what additional units should we keep, like a battle group in the Gulf, Red Sea, operations? What is your recommendation for the future?

Admiral **Kelso**. I believe, sir, that we will keep a force of about the size that we have had in that region of the world, after we get a ceasefire, and we will augment that force for some period of time with carrier battle groups and probably a Marine amphibious MEU(SOC), that would be my guess. That has not been established at this time.

Senator **Warner**. I am talking post-ceasefire. What are your recommendations? That little facility in Bahrain could not service a battle group with any frequency, could it?

Admiral **Kelso**. Yes, sir. The logistics support through Bahrain and several of the other ports in that part of the world served us pretty well when we had 20 or so ships out there during the tanker war, and that really was sort of the beginnings of what we started and built up out here. So it facilitated that. So we could probably live with about the level of support we had in that period of time if we stay at one or two battle groups.

Senator **Warner**. But that is utilizing other port facilities in Bahrain?

Admiral **Kelso**. Yes, sir.

Senator **Warner**. General McPeak, what is your recommendation for the air element, ground-based?

General **McPeak**. Well, sir, whatever the President asks us to do obviously we will do.

Senator **Warner**. I know. But you are in the process of making recommendations to the President.

General **McPeak**. No, sir, I am not.

Senator **Warner**. All right. That answers the question. My time is up.

Senator **Exon** [presiding]. Thank you, Senator Warner. Senator Glenn.

Senator **Glenn**. Thank you, Mr. Chairman. I wanted to take the opportunity to compliment you gentlemen. You are the ones that had to make it work, and you have not been the ones on the networks every night. I am not criticizing the people that were, but you were the ones that once a decision was made, then you had a dual responsibility. You had your purple suit responsibility as a member of the Joint Chiefs to implement policy, and then you each individually had to go back to the Pentagon and make your own services work and carry this whole thing out. So I do not think any one of you has gotten the accolades that you deserve. Others may have gotten more attention out of Operation Desert Storm, but you are the ones that really put it together and made it all work. So I think we owe you a great debt of gratitude for this.

I had the pleasure of visiting the theater of operations with John Warner and some of the other members here, as was mentioned when the hearing was opened, over this past long weekend. We found that the men and women deployed in Operation Desert Storm hold the highest degree of professionalism as well as a great commitment to their mission.

As you may be aware, we put together a comprehensive personnel benefits package here. We talked about that over there and gave copies of the package, on behalf of Senator McCain and myself, to the major combat leaders that we met with, and they seemed to think it was a good package and were very complimentary about putting that whole thing together.

You cannot help going into that area and once again being impressed with the horrors of war and the devastation that occurs in war. I guess there was one remark that really stuck in my memory, and that was when one of our combat commanders said that he took real pride in the fact that our people quite often held their fire. In other words, we were not there to butcher people. But in the confusion of combat, it was a dicey situation where people might have hostile intentions or they might be trying to surrender. Instead of clobbering those people, they held their fire and took them prisoner, they could just as easily have made the decision to mow them down where hostile fire was still going on all around them. I think this discipline is very notable and demonstrates tremendous skill and a great deal of command presence when people can hold their fire instead of lashing out at whatever pops up in front of them. I want to pass that along to you also.

We asked General Schwarzkopf for a list—I asked him in our briefing—not of what went right but what went wrong and where we should look for improvements in the future to make things work better, even though this was a very successful operation. Just to tick off a few, the fast sealift has already been mentioned. Tactical air intelligence was practically nonexistent. For instance, one National Guard outfit out of New York still had the ability to take pictures over the battlefield, try and get them back so the pilots could benefit from that and have target run-in pictures. They were getting those pictures some 3 days later, so nobody even paid any attention to that information. Planners gathered air intelligence by depending on pilots coming back to brief the next pilots going up, and that was sort of the way things worked. In a more dispersed battlefield situation, I do not think that would be satisfactory.

Minesweeping has already been mentioned, both at sea and on land. The breaching went well, as General Gray said, but I think we would like to see some better ways of doing that, if it is at all possible. The relationship between reserves and regulars was another area of interest that we pointed out. If there is a counterpart civilian job, a Reserve can usually fill that position just as well as

Regular. If not, then force integration becomes a matter of timeliness, whether you have to provide time for additional training so the Reserves can come up to speed before deployment.

Another area of concern is friendly fire and the corresponding identification of vehicles on the ground. This was mentioned earlier and is very significant. In a fluid situation where you are not quite sure of what targets you are hitting, you need something like airborne IFF for air-ground. We do not have those systems yet and they must developed.

Regarding communications, SINCGARS radios need some work so they are less jammable. I asked each of the commanders about deploying. We need the C-17 for rapid deployment. We need the fast sealift. We want the range and speed to deploy rapidly. We want the same thing in the battlefield; now I will get to the commercial, and that is the V-22, the Osprey.

It boggles my mind that we are going to have to replace our helicopters. They all wear out. In the V-22 we have something that will go twice as far, twice as fast, and with a third more payload and we are not jumping to get it. While in the theater of operations, I privately asked every ground commander about this situation so I could get his private assessment on it. Whether Marine or Army, they all would like to have that. I can tell you that, General Vuono, and I know General Gray's attitude on this also.

So it appears to me that the V-22 must continue being developed. It has a lot of flight time on it already, a lot of testing. We have an AirLand doctrine, as we call it, that calls for the maximum mobility to leapfrog and to rapidly assemble people from various locations. Here we have it, better than any helicopter can do now and somehow the people over there have decided that they do not want that for whatever reasons. General Vuono, would you not like to have the V-22 for the Army?

General VUONO. I would rather have the light helicopter, Senator.

Senator GLENN. The light helicopter?

General VUONO. The light helicopter. That is my top priority because our major battlefield deficiency in the air is armed reconnaissance, and that is what the light helicopter does for us.

Senator GLENN. Does that fit in, then, with the AirLand doctrine of mobility and leapfrogging?

General VUONO. It meets one of our battlefield deficiencies. In order to meet the mobility on the battlefield, we use a combination of UH-60 helicopters and the Apaches to give us the fighting capability, and the CH-47s for support over the distances that we have to go.

Senator GLENN. These have about half the range, half the speed of what the V-22 will have, and a portion of the payload. General Gray, wouldn't you like to have the V-22 for the Marine Corps?

General GRAY. What we need, of course, is to replace our medium lift requirement. If the replacement is going to be a helicopter, then let us make sure that it is the best helicopter, the best avionics. That is what drives the cost up, and we need them in proper numbers if we are going to be able to come from the sea and do what must be done deep inland. And we need to be prepared to give them a proper avionics capability—which drives the cost up. But what we really need is a decision one way or the other. The capability of our CH–46 fleet is moving closer to the margin. We are about to cross over it.

The Osprey is a tremendous concept and certainly we would like to have it. If my information is correct, so would many others. The V–22 can really open up the battlefield. It can assist us in defeating precision-guided munitions. It has a wide variety of potential support missions ranging from amphibious assault to special operations.

It would also make long-range evacuations much easier. To rescue the Americans threatened in the capital of Somalia, our CH–53Es had to fly 450 miles at night, from the sea, with two refuelings from KC–130 aircraft, and with less than the best kind of navigational equipment. The V–22 would have required no refuelings, been faster, and been better equipped to accomplish the mission.

So, there is no question in my mind about the tilt rotor concept, the need for it, and its potential use in both the military and the commercial sector. The problem, of course, as I said 2 years ago, is that it is a hell of a time to have a new aircraft start. That has been the issue.

Chairman NUNN [presiding]. Thank you, Senator Glenn. Senator Lott.

Senator LOTT. Thank you, Mr. Chairman. General McPeak, there was an article on the front page of a local newspaper this past Saturday quoting you with regard to the success or failure rate of the so-called dumb bombs. I suspect that, as is quite often the case, while the numbers may have been accurate, the emphasis was changed from what you would have intended to have been portrayed in that article. But I guess the question is, was the failure rate as high as that article indicated? And what does that mean for the possibility of the advanced bomb family that we have been thinking about?

General MCPEAK. Senator, I really do not know. I think a close reading of that article would show that a "senior Pentagon official" was responsible for the percentage number, not me. So I do not know what that percentage number meant. In a briefing that I gave earlier, what I said was that in 43 days of action in the Persian Gulf we had dropped about 50 percent more precision tonnage than we did in the whole Vietnam war.

Senator LOTT. But what percent was that of the total amount?

General MCPEAK. Well, we dropped about 7,400 tons of precision munitions, and about 84,200 tons total. So it was not anything like the 70/30 split there. It was maybe 8 percent or something like that of all the munitions dropped were PGMs.

Now of the non-precision munitions that were dropped, I have absolutely no data, and I do not think anybody else does, on whether they hit or missed. But most of those munitions were used in what I would call area type targets. In other words, if the target was the field army deployed in the Kuwaiti theater of operations, that is an encampment with maybe a supply concentration over here, a vehicle motor pool over here, spread out all over the place. And if we walked a stick of bombs dropped by B–52s through that encampment, I suppose you could say none of them hit anything.

But you would have to go interview those folks and find out if that was a hit or a miss. In fact, the reporter who wrote that article, I have offered to miss him with a few of these munitions. [Laughter.]

General McPEAK. How do you define a miss? A 6-inch miss with an unguided bomb, if you are going after a bridge, is often a gross miss because the bomb goes in the water 100 meters away from the bridge and it does nothing. A 6-inch miss into an army encampment or into a nuclear research facility, which is a large-area target spread out over a couple of blocks, that is a miss that did a lot of good work.

Senator LOTT. Let me interrupt you, then. You are indicating here that there was not any substantial disappointment in the success rate overall.

General McPEAK. Absolutely none.

Senator LOTT. And in terms of what we learned from this engagement about munitions, what was it?

General McPEAK. Well, what we learned was that that reporter misunderstands combat. [Laughter.]

Senator LOTT. Anything else we learned about the engagement?

General McPEAK. We are very happy with the results of the precision-guided munitions. I believe it is cost-effective. It is a force multiplier. It is an area in which we enjoy a competitive advantage and one where we must exploit it. But our aimed munitions, not precision-guided end game but aimed munitions, also were very effective. In any kind of a war of attrition—and even a 43-day war is a war of attrition in some respects—you have to be able to buy munitions inventories relatively cheaply that you can expend over a period of time. So I do not see any alternative to continuing to buy and use unguided munitions—unguided but aimed by the pilot—and we continue to work on how to aim them better. Our accuracies were at least an order of magnitude better than Vietnam accuracies. We have come a long way in onboard avionics that allows the pilots to better aim the munition.

Senator LOTT. General Gray, did you want to comment on that?

General GRAY. I just wanted to reinforce the latter part of General McPeak's statement. We have all watched the strategic air effort on television, and know the important role that precision-guided munitions played in shaping the strategic environment. But it was the remainder of the air effort, using general purpose ordnance, that denied the enemy the ability to act or to move or to reinforce. He could not do what he had to do to prepare for an attack. That played the crucial part in shaping the battlefield. That can be done many times with general purpose ordnance.

Senator LOTT. General Gray, everybody agrees that the maritime prepositioning ships program worked great. You are going to be involved now in restocking those ships. Would you plan now to just restock, or do you want to restock and improve it in some way? What would you suggest in that area?

General GRAY. We are already improving it. We have looked at this very carefully for some time, and we now have a new plan that will permit us to be able to operate from single ships as well. As I alluded to earlier, we tested this concept in an exercise in Korea. It is our plan to reconstitute one of our maritime prepositioned squadrons in the Persian Gulf. We are in the process of doing that now. Concurrently, we will tactically backload the other two squadrons maintaining their equipment readiness. We will then complete their refurbishing and introduce the enhanced single ship capability just discussed at our facilities at Blount Island. But we are going to come out like we went in: tactically by echelon and ready in case something comes up during the long trip back home.

Senator LOTT. General Vuono, my time has expired. Let me ask you one more question. Since it is coming from my colleague here, I will just ask one more. I understand that recently the Army has reported that the Dragon medium antitank system replacement was having some problems and difficulties. Does that create some problems for you? What is the significance of that?

General VUONO. First of all, let me say that the requirement that we have for a man-portable antitank system is a top priority in the Army and we are going to continue to push for that system. The particular technology, which is a fire-and-forget technology, is one that we are bringing on line. There has been or will be a slippage in the program of a few months, but we are going to stay the course on that system because it gives us a system that meets our deficiency and it is a requirement that we must fill.

Senator EXON [presiding]. Thank you very much, Senator. Gentlemen, let me add my thanks and salute to all of you for a job tremendously well done, and thank you for your forthcoming testimony here today as we plan for the future. Talking about the future, I would like to start with you, General Vuono. I have heard some conflicting reports about the assessment of the role that the Reserves and the Guard played. From the information that you have now, did the Guard and the Reserves successfully play the role that was designed for them when the forces were restructured some time ago?

General VUONO. Let me start by saying, Senator, one of the great success stories, in my view, of Desert Storm has been the performance of the Reserve components—in the case of the Army, both the National Guard and the Army Reserve units. Those units that we alerted, sent to mobilization stations and deployed, either to the Gulf or to installations within the United States and Europe to backfill the forces that went over to fight in the Gulf, performed superbly and proved that the Total Force Policy is a sound policy.

People sometimes forget the magnificent performance of those splendid men and women and we focus only on a small element of the mobilized forces. The element that most people are focusing on are the combat brigades of the Guard, which we called up and provided additional training so that they could hone their combat skills and learn to integrate combat power before we deployed them to the Gulf.

My personal view, is across the board—combat, combat support, and combat service support—the performance of the Reserve component is one of our success stories. Like everything involved in the Gulf, we are doing an assessment of the mobilization, and specifically, an assessment of the roundout concept. My personal view is that there is a role for combat brigades in our reshaping of the force.

Senator **Exon**. I am delighted to hear that. That was what I had heard. Do any of the other members of the panel care to comment on the Reserve forces?

Admiral **Kelso**. Senator, I am sorry I did not mention it earlier when Senator Glenn asked about things that worked. We had many Reserve units supporting the naval forces deployed to the Gulf. Many of these units have no active duty counterparts. They all came up smartly; they were trained well and did their job, particularly in the medical reserves. They backfilled our hospitals in the States. They did a magnificent job of manning the two hospital ships and our field hospitals which we brought. So I do not think any of us could provide enough thanks for what they did for us.

Senator **Exon**. Thank you, Admiral. General Gray, let me ask you a question. I thought it was a very brilliant maneuver that was designed by someone to propose a threat of a Marine landing, which, as I understand it, tied down a significant Iraqi force. But the Marine landing never took place. I assume that you agreed with that plan and knew all about it. My question is whether or not we had sufficient minesweeping personnel to eliminate any serious problems that the Marines would have had had a landing been ordered as a part of our attack.

General **Gray**. Sir, the threat to come from the sea was a real threat. By that I mean we were fully prepared in the 32 amphibious ships to conduct a major amphibious assault, either through several different parts of Kuwait or the southern part of Iraq. Portraying a threat such as this is the only way to mount a successful deception. And for the threat to appear fully credible to the Iraqis, the amphibious assault was not designed as a deception alone. It was designed to be able to give the unified commander something decisive to do. For example, if something broke down further out west or in Kuwait proper, we would have provided some alternatives to repair the situation.

On the minesweeping and mineclearing effort, we were faced with an extraordinary number of mines. In my judgment, we will not often encounter the types and magnitude of mines we did, except when we are again forced to operate in a narrow choke point or strait like the Gulf. Elsewhere they would be less of a concern. In any event we were, in my military judgment, fully capable and prepared to deal with this mine threat.

As has been pointed out earlier, however, we can improve in this area. We must improve the speed by which we dispatch the enemy mine capability. We must also be able to deal with a wide assortment of mines—some less sophisticated and some less of a threat, and some very difficult to hunt, find, and do something about. In the future, for example, we must anticipate more shallow water mines and mines in the mud. These types of mines are the most difficult to deal with.

I am personally very pleased that we have a joint Navy-Marine effort going on full speed. We did an awful lot to prepare our people for this operation, and as far as the CNO and I are concerned, we intend to keep this on the front burner.

Senator **Exon**. But you are saying we should probably do more in this area?

General **Gray**. I believe that we have to do more. I will not speak for the CNO but I think that it is generally acknowledged within the Department of the Navy that we can and will do more.

Senator **Exon**. General McPeak, looking to the future—and we want to talk about that, too—the $2.35 billion that you have in the 1991 budget for the B-2 aircraft, will that be used to purchase two additional B-2s, or will that sum be used to take care of the shortfall that I understand has come with regard to the funding of the original 15 aircraft?

General **McPeak**. The short answer is we are authorized to buy 15 aircraft, and the money provided up through the 1991 appropriation will go towards paying for those 15 airplanes.

Senator **Exon**. Thank you. My time is up, and I believe that Senator Mack is next but he is gone. Senator Cohen.

Senator **Cohen**. Thank you. General McPeak, it was recently reported, I think in a January 31 speech that you gave, that you suggested that there might be a unified command or possibly combining Air Force and Navy strategic nuclear forces into a single command. I assume that you were suggesting a truly unified command, not simply giving SAC control over the Navy's strategic ballistic submarines.

General **McPeak**. No. That is what I had in mind.

Senator **Cohen**. You really just want control over the Navy's strategic? Well, that is not quite consistent with Goldwater-Nichols. Obviously you are talking about a real unified command, are you not?

General **McPeak**. Sir, this is not my idea. As you know, the Chairman has a requirement to review the unified command plan every couple of years, and he has talked about putting together—or in the staffing he has some of his staff guys talking about putting together—a new strategic command. So I think that is the genesis of that idea.

Senator **Cohen**. Well, I think it has some merit to it, provided it is put together in the right way. For example, I think we have about 40 percent of the U.S. warheads now on hard target capability of the D-5, so it would make sense to me, if you are going to have a single unified command, that you have as the commander either an Air Force or Naval officer. I do not think I would find any disagreement between either you or Admiral Kelso. I would have a question. If you had such a unified command, would you put all of SAC's assets under that command? Should anything be transferred out, such as tankers or conventional bombers?

General **McPeak**. Sir, frankly I think Operations Desert Shield/Desert Storm have kind of interrupted the process here, but the Chairman has not really brought forth proposals yet based on his review of the current UCP for our overall review, so I just do not know what it is he proposes to do. I really think that we need to go through the normal staffing process and figure out how we feel about that, but we have not done it yet, quite frankly.

Senator **Cohen**. Admiral Kelso, I assume you have a similar lack of enthusiasm for what I just suggested? [Laughter.]

Admiral **Kelso**. I would share the General's view that we have not done the staffing to answer your question very well, Senator.

Senator COHEN. Here comes Goldwater-Nichols at you again. We will take a look at that as we go along.

General McPEAK. I do not object to that. I just would like to think it through, and I do not think we really have had time to do it, because we have been kind of tied up.

Admiral KELSO. I certainly do not think we have thought through the logistics and that sort of thing, sir.

Senator COHEN. General Vuono talked about the importance of the MLRS and the ATACMS. General Gray, the Marine Corps, does it have the MLRS and the ATACMS available to it?

General GRAY. No, sir, we do not. We looked at the MLRS. We had it in our program for some time, but it is simply unaffordable. What we would prefer and what we are looking at through the R&D process is a lighter-weight system. For example, we would like something that could fire a half a pallet of MLRS rockets from an assault amphibious vehicle or a similar platform.

Senator COHEN. I raise it because both the authorization committee and the appropriation committee last year gave some specific direction to the Navy, for example, to spend some $31 million to have a proof of principle of both the MLRS and ATACMS for ship-to-shore support for the Marine Corps. Senator Warner was touching upon the fact that we have only two battleships left. We may not have those, maybe only one. And that sure is not going to be satisfactory for the Marine Corps.

The question I have is, why isn't the Navy moving forward as quickly as possible with some kind of a concept to put these systems on board whatever it is we can sail, that would carry them, whether they be Marine amphibious ships? Don't you think the Marine Corps ought to have this kind of ship-to-shore fire support?

Admiral KELSO. Well, I certainly think we need to look at how we are going to provide that support in the absence of the battleships.

Senator COHEN. But, Admiral, even if you had two battleships, assuming we save them both, which is a big assumption, is it going to be enough for the Marine Corps to have just two battleships to give them that kind of ship-to-shore support, given the global responsibilities?

Admiral KELSO. I would agree, Senator, we probably ought to look at how we are going to provide that support to the Marine Corps.

Senator COHEN. Well, the committee agrees we should be doing that. A quick question, a general overview regarding the reorganization of intelligence. There is an effort under way that has been directed by this committee and the Senate Intelligence Committee to review the organization of the intelligence community structure to see if we can make it more effective and efficient. Do you have any recommendations in terms of what you think ought to be done in the way of any reorganization effort for both strategic and tactical intelligence? There is a lot of duplication. There are a lot of questions about whether or not we have had effective enough tactical intelligence, whether or not we have had a spread of bureaucracy through the intelligence community. Do you have any thoughts that you could share with the committee now or, if necessary, in writing in terms of what you would recommend about how we eliminate either waste or duplication, redundancy? [Pause.] Do you want to plead the Fifth? Does anyone want to say anything?

General **McPeak**. I would just say, Senator, over the years intelligence has been a growth industry—so you would have been well-served to buy stock in it early on—both in the number of manpower spaces that are tied up in it and the dollars that are going into it.

My impression is that, in general, we have worked the problem of providing information to Washington pretty well. We have not worked the problem of providing information to the theater tactical commander quite as well. But the harsh irony of this thing is that most reorganization ideas result in some sort of consolidation which further strengthens the power of the intelligence apparatus in Washington, so that we are really kind of over a barrel here. All of the ideas that I have heard about consolidation are almost doomed to fail in solving the real problem, which is improving theater intelligence support to the combat commander. I have not seen any ideas that say we ought to reduce the overhead structure in Washington and put resources back out where the action really is.

The reason you do not is that that goes directly against the motto that we need to streamline and cut down on the manpower spaces and dollars. But the manpower spaces and dollars that get cut are at the scene, where they are needed. So I am not real enthusiastic about reforms that result in further consolidation of the intelligence activity, because I do not think they will really solve the problem. They have not over the years.

Senator **Cohen**. As you know, this committee, when it went through the whole Goldwater-Nichols legislation, the purpose was designed to give more power, more autonomy to the field commanders as such, so we were successful in that regard to spreading it out, and what you are suggesting is there is no amount of—that is overstating it—in your experience there is not much that you could recommend in the way of reorganization that does not end up consolidating existing bureaucracies and consolidating power and information here and not out in the field.

General **McPeak**. There seems to be an inexorable, unopposable force in action here, a law of physics that says all this will be consolidated in Washington. And it is often done under the rubric that that will mean we can streamline and consolidate and reduce. My experience is it does not streamline, it does not reduce. It increases the dollars. It increases the number of people, but it moves the action and the information to Washington in a way that does not serve our purposes in combat.

Senator **Cohen**. Admiral Kelso.

Admiral **Kelso**. I was going to say I hope we emphasize the intelligence available to the tactical commander, because my experience is that it is very valuable and without it, you do not have a picture of what you are doing. Although you may get intelligence from other areas, what is real time is what you have to act on in the field to do your job, and if you do not have good tactical intelligence you may make some serious mistakes.

I do think there are some areas for improvement. When I was in Norfolk, for example, we put the Navy's intelligence and the joint intelligence together forming one unit. There was some duplication there, and I think it was reasonable to combine capabilities. There may be other areas like that. But I would hope that we would keep the emphasis on intelligence available to the tactical commander so that he can control the intelligence.

Senator EXON. Thank you, Senator Cohen. Senator Levin.

Senator LEVIN. Thank you. Let me add my commendation and my gratitude to each of you for your role in the recent great success in the Persian Gulf. This Nation is very much in your debt, as well as, obviously, the troops first and foremost.

General McPeak, first let me ask you some questions about ICBM modernization. In your prepared testimony you indicated that we are going to have a number of options relative to ICBM modernization, that the Air Force basically has determined that we are going to validate the mobile MX first, and then we are going to put that basically on the shelf after validation and not procure any additional MXs.

As far as the Small ICBM is concerned, the Midgetman, we are going to proceed up to the point of the procurement. We are going to, if the Air Force's plan is carried out, develop it but not procure it until we make a basic decision, which is whether or not we want it at all or whether we would prefer to upgrade the Minuteman III, whether if we do decide to deploy Midgetman we want to deploy it in either a mobile or in a fixed base.

But all three options for modernization are being left open by the Air Force relative to Midgetman versus Minuteman III. Is that basically a fair statement?

General MCPEAK. Sir, I am not sure I would formulate it in exactly the same way. We do have a small amount of money in the President's budget submission to continue R&D on Peacekeeper rail garrison, but it is not much. It is really skinnied back quite dramatically. And you are correct; we have no further Peacekeeper procurement in the program either for a rail garrison or any other mode.

We have a much more robust, aggressive R&D program than the money in there for Small ICBMs. We do not procure any small operational missiles because we do think it is a good idea to delay the decision on basing mode. But the R&D there will be continued to field it at the end of this decade in either a silo basing mode or as a mobile missile, and that is fully funded.

So I think you can say we really do not have three programs. We have essentially tapered back on Peacekeeper rail garrison. We have an aggressive small missile program aimed at putting us in a position downstream somewhat to make a decision on basing.

Senator LEVIN. I did not intend to say, and I do not think I said three programs. I said three options.

General MCPEAK. Yes, sir.

Senator LEVIN. And, as I understand what you have just said, we will have three options. We either can go with the Minuteman III, upgraded—that is option 1—Midgetman in silos, number 2, or a mobile Midgetman, number 3. Is that not accurate?

General MCPEAK. Yes, sir, or we can circle back, if the START talks do not go correctly. We can circle back on the issue of Peacekeeper rail garrison. We will have enough R&D done and studies and so forth that we will know what we can get there.

Senator **Levin**. So we will have four options, and we are not committing ourselves, nor has the Air Force decided, which of those four options it seeks or will seek to pursue.

General **McPeak**. That is correct.

Senator **Levin**. Can you give us an idea as to the difference in cost, just a very rough estimate, in those options?

General **McPeak**. No, sir. I will be happy to provide it for the record, but I cannot give you a combat-ready answer.

Senator **Levin**. All right.

[The information referred to follows:]

ICBM Modernization

The Air Force does not characterize ICBM modernization options as mutually exclusive. Depending on future START developments and budget decisions, a combination of options may be best for deterring nuclear war. For example, we could have a combination force of de-MIRVed Minuteman III missiles with upgraded guidance and new/overhauled rocket motors and Small ICBMs (SICBM) on hard mobile launchers. This combination would retain a portion of the low-cost, silo-based Minuteman, while deploying mobile SICBMs for survivability. While potential permutations are many, the following are a few "cost-to-go" estimates in then-year dollars. Minuteman III, with upgraded guidance systems, new motors, and conversion to one warhead per missile, would cost approximately $3B for all 500 Minuteman IIIs. SICBM, placed in existing Minuteman silos, would cost an estimated $33B. SICBM on hard mobile launchers (first assets delivered in 1997) would cost approximately $40B for 500 missiles. Peacekeeper Rail Garrison would cost approximately $6B to $7B to redeploy from silos to garrison-based trains. Again, we are looking at a combination of options that will minimize cost, reduce risk, increase survivability, improve the value of our Triad deterrent force, and keep our vital industrial infrastructure viable. Peacekeeper, Minuteman, and SICBM provide many options and offer an opportunity to economically tailor the ICBM force structure to national objectives.

Senator **Levin**. Is it likely that by far the cheapest option would be to download the Minuteman III?

General **McPeak**. Yes.

Senator **Levin**. Then the actual dollars you can supply us, if you would, for the record, and this will, to some extent, be affected by the outcome of the START negotiations?

General **McPeak**. That is correct. Yes, sir.

Senator **Levin**. Is it fair to say that if the START negotiations go well and we enter into a START agreement and we significantly reduce the number of ICBMs that are available to each side that that might make it possible for us to go with the upgraded Minuteman III? I am not trying to commit you to that, but I am saying it might make it possible.

General **McPeak**. Well, it might. Frankly, I do not know much about the upgraded Minuteman III. I will have to plead ignorance on it. But I am very optimistic that if we can make progress in START we can reassess the size of the investment needed in strategic modernization.

Senator **Levin**. The prepared testimony that you provided for us says that the Minuteman III force will be retained and the silos upgraded. That is what I was referring to as the silo upgrade, with new computers and launch control facilities.

General **McPeak**. Yes, I understand. I believe it will be necessary to replace Minuteman sometime after the turn of the century just based on the age-out of the force. So I am not optimistic that we can simply modify it and walk away from it as being our strategic modernization.

Senator LEVIN. For a long period?

General MCPEAK. For a long period.

Senator LEVIN. Can you give us some idea, if we do follow the route of the upgraded Minuteman III as to how long that upgrade would last?

General MCPEAK. Well, as I say, I think we need to look at a Minuteman replacement sometime after the turn of the century.

Senator LEVIN. All right. My time is up. Thank you.

Senator EXON. Thank you very much, Senator. I see next would be Senator Smith.

Senator SMITH. I'll defer to Senator Coats.

Senator EXON. Senator Coats.

Senator COATS. I thank my colleague. First of all, let me say to all four of you that I had the opportunity to travel with the delegation to the Persian Gulf this past weekend and visit with various commanders and everyone from generals to privates. I could not help but come away with a very deep impression of the total professional attitude and quality of our forces. Their discipline, their commitment, their loyalty, their execution, their maturity is extraordinary. Having served in the Army during the Vietnam era, contrasting the volunteer Army versus a draft Army, there is a remarkable difference, and I think it proved itself in this past operation.

I was particularly struck by the fact that inserting close to 540,000-some troops into a culture which was really 180 degrees different from our own and from what our troops experienced over here, that those troops adapted to that and respected those differences in a remarkable way. I think it was General Pagonis who said that he had not received one reported incidence of misconduct by any of our troops while on leave or away from their assigned unit in any of the Saudi cities or villages or towns which they went into. I think that is an extraordinary statement and a great testament to the quality of leadership and the quality of troops and the discipline of those troops. I was very, very impressed by that. I think the four of you are to be commended for setting the standards and setting the example and having that carry right on down through.

I also wanted to just follow up on a couple of questions here. As all of you know, the SINCGARS radio as a means of communication is being deployed throughout the command, yet there are a number of units that did not have that. I received a number of reports from commanders and soldiers in the field that they really wished they had had that, that communications, although successfully carried out, could have been much easier carried out had the SINCGARS been integrated throughout the forces during this operation. I wondered if any of you had any comments on that, particularly General Vuono.

General VUONO. I would agree with the comments you are getting. The SINCGARS radio was developed to meet a specific requirement. It has performed superbly. We are fielding it as fast as we can. We just have not been able to get them to all the units in the time frame we would like to have it. But it is absolutely a good system and what the soldiers and commanders told you over there is absolutely correct.

Senator COATS. General Gray?

General GRAY. We would support that in toto, sir. Of course, it becomes very difficult for us. It is an affordability issue. We were able to keep SINCGARS in the program and continue to do that. However, as always, we are up on the margin.

Senator COATS. Well, that is the kind of system that might make the margin of difference. Obviously you want it. You have tough priority decisions to make. Just given the integrated nature of this operation and potential future operations, I would hope that we could integrate the communications system, and obviously that is part of our job, to give you what you need.

General GRAY. I agree with you, sir. It is a function of money.

Senator COATS. I also want to just make a comment. Surely we can move quickly to some type of system which can identify our vehicles and troops and protect them from some type of friendly fire problem, a system better than putting a neon V or slapping something on the back of a tank or Bradley fighting vehicle or APC or whatever, which obviously the enemy could duplicate very easily. It just seems to me that, given our expertise in developing electronic devices, that some simple device that could be coded and then the signal adjusted whenever you wanted to, perhaps just hours before the battle, and then transmitted up to our air assets, so that if we locked on the wrong vehicle, our own vehicle, you would get a warning. I know you do that, General McPeak, between air assets. Surely air-to-ground, something relatively simple could be developed in that regard.

General MCPEAK. Well, it is an old problem. We have done close air support for a long time. It is relatively straightforward in the daytime. These incidents occurred at night, of course. Now you have a guy flying around in an A-10 that does not have an autopilot in it, a very simple airplane made to do close air support, flying it with his knees trying to look down through a Maverick seeker-head with a two-degree field of view at hot blobs on the ground and pick out the friendly blob from the enemy blob. In that case, he happened to be under the control of a Marine forward air controller, and we had a marker on the ground and everything else. So I just want to say that this is not an easy thing to do. We work hard at it. We need to redouble our efforts because even though it was only a couple of vehicles out of 10,000 or so we attacked, nevertheless it makes us feel pretty bad.

Senator COATS. I can perfectly understand how it could happen. I guess what I am saying is that I do not know why we ought to have to depend on that pilot to make that split-second decision. Surely there can be some system, a device that can send out some signal which can give him notice or warning that he has locked into the wrong vehicle.

General MCPEAK. It is not an easy problem, Senator.

Senator COATS. It probably is tougher than what I think. But we have developed some pretty sophisticated stuff.

General MCPEAK. The guy on the ground does not want to emanate radio signals. I mean the operational security aspect is a problem. It is a perfect homing beacon for an enemy missile that homes on radio beacons. So if you make it real simple it turns out to be a very difficult problem. We need to sort it out, and I know Carl is worried about it and working on it, and so am I and so is Al and so is everybody else. But in the end it will be a tough one.

Senator COATS. Well, I hope we keep working on it. Admiral Kelso, a question for you. We have up on the floor right now legislation to provide supplemental funding, and added to that has been a provision which would say that none of the funds available to the Department of Defense may be used for advance procurement of material and other efforts associated with the industrial availability of the *Kennedy*, other than to SLEP the thing at the Philadelphia Naval Shipyard. That, from my understanding, may go contrary to what the Navy's decision is regarding the *Kennedy*. My understanding is that the current program is for an overhaul, but not a SLEP, and that the difference in cost might be as much as $500 million. I wonder if you could comment on that.

Admiral KELSO. The Navy's current plan for the *Kennedy* is an overhaul. A SLEP is considerably more expensive. Full SLEPs like those we have been doing entail considerable expense—more than the overhaul the *Kennedy* is budgeted for, sir.

Senator COATS. What is it that you prefer—the overhaul or the SLEP?

Admiral KELSO. Well, our current plan in the budget is to overhaul the *Kennedy*, sir.

Senator COATS. Do you have the approximate cost?

Admiral KELSO. I would have to give you the cost for the record.

[The information follows:]

The fiscal year 1992-1993 President's budget provides $376 million Operations and Maintenamce, Navy (O&MN) and $59 million Other Procurement, Navy (OPN) to perform a fiscal year 1993 Complex Overhaul for U.S.S. *John F. Kennedy* (CV 67). This includes 677,000 mandays for repairs and 120,179 mandays for modernization.

Senator COATS. But it is considerably less than a SLEP.

Admiral KELSO. It is less than a SLEP, yes, sir.

Senator COATS. This clearly is a decision here by Congress to, in my opinion, micromanage a decision that ought to be yours relative to the life extension of that carrier and where the work ought to be performed.

Admiral KELSO. Sir, I understand and, as I say, our plans had been to overhaul it. Location is another issue and I think we will have to address this issue as to where the ship is overhauled. It is an overhaul. I forget what year it is in, but I do not believe it is in this fiscal year.

Senator COATS. I guess if this passes you will not have to address the issue. One last question on that. Given the budget that is now in place relative to reducing the number of carriers from 15 to 12, how does this affect that decision?

Admiral KELSO. That would not affect carrier levels. If the *Kennedy* were overhauled or SLEPed, it would not affect carrier levels that we are going to in 1995. She is still a part of that.

Senator COATS. Thank you.

Senator EXON. Thank you, Senator Coats. Senator Smith.

Senator **Smith**. Thank you, Mr. Chairman. I have some formal comments for the record, and I ask unanimous consent that they be included.

Senator **Exon**. Without objection, so ordered.

[The prepared statement of Senator Smith follows:]

Prepared Statement by Senator Bob Smith

Thank you Mr. Chairman. General Vuono, Admiral Kelso, General Gray, General McPeak, it is a pleasure to welcome you before the Senate Armed Services Committee. Before we begin, I would like to congratulate you, the Joint Staff, and most of all the men and women of our Armed Forces for a job well done. The unprecedented success of Operations Desert Shield and Desert Storm is a credit to the dedication and commitment to excellence embodied in our military personnel.

Today, as the committee meets to further examine the fiscal years 1992–93 defense authorization and multiyear defense plan, the United States military stands proud and triumphant. The masterful campaign to reverse Saddam Hussein's aggression has affirmed U.S. resolve and quelled even the most fervent of skeptics. Importantly, the unqualified victory has reestablished the long dormant prestige and credibility of our Armed Forces.

There is much we can learn from the Persian Gulf crisis. However, amidst the plethora of issues, one simple fact emerges: Desert Storm succeeded because the military was permitted to prosecute the war quickly and decisively. By allowing the Defense Department to effectively employ its myriad of assets, President Bush ensured swift victory with minimal casualties.

It is equally clear, however, that the fundamental threat assumptions upon which last year's budget was premised are, in fact, short-sighted and inaccurate. Clearly, the liberalization of Eastern Europe and the resulting dissolution of the Warsaw Pact are monumental transitions with profound implications on U.S. military doctrine and force posture. However, the Soviet Union remains internally unstable, and the sole nation capable of destroying the United States. As General Powell has so aptly stated, "we may not know what their intentions are, but we certainly know their capabilities."

Moreover, Iraq's brutal occupation of Kuwait, coupled with its heinous ballistic missile and environmental terrorism, serve as a grim but forceful reminder that substantial post-cold war regional security challenges exist, and the United States must be prepared to counter these threats.

The Persian Gulf war demonstrated the inestimable value of technology and training in modern warfare. Currently, the U.S. military is the most efficient and operationally effective fighting force in the world. Morale has never been higher. However, as I examine the administration's fiscal years 1992–93 defense authorization and multiyear defense plan, I am alarmed by the scope and rapid pace of our military drawdown. Frankly, I see no way we can continue to meet alliance and global security requirements in 1995 with an active end-strength of 1.6 million personnel, and a force structure of:

- — 12 aircraft carriers (down from 14)
- — 18 Army divisions (down from 28)
- — 26 tactical fighter wings (down from 36)
- — 451 battle force ships (down from 545)
- — 181 strategic bombers (down from 268)

Without question, changes in the international security environment merit a restructuring of American military forces. However, I am deeply concerned that we are embarking on an escalatory disarmament trend which could compromise our long term capability and readiness. Desert Storm vindicated Ronald Reagan and those who fought to revitalize American defense forces during the 1980s. Now, tough budget decisions must be made, but not at the expense of critical national security requirements.

Thank you, Mr. Chairman.

Senator **Smith**. Gentlemen, I would certainly like to echo the remarks made by Senator Glenn and many of my colleagues in terms of the outstanding job that you have all done for your country. You did not get a lot of press, but you did an outstanding job and we are certainly very grateful. I think what you will all be remembered for so well is the fact that you took the weapons, technology, and manpower and blended it together. As a result, the United States scored a great victory with a focus on the saving of human life; both allied human life and enemy human life. I think the Nation will remember you foremost for that.

I know also, General Gray and General Vuono, that in the near future you will be moving on to some other endeavor. I do not know what that will be. But I would just like to say that this may be the last time that you two will be before the committee and I just want to, on behalf of the committee, thank you for your service. Hopefully neither one of you are going to move to New Hampshire and run for the Senate. Having said that, I know that other gentlemen here want to ask questions, so I will be very brief. I would ask that you each respond in your respective commands to a two-part question.

First, on the end-strength reduction from 2.1 million to 1.6 million, how you see this affecting your missions. Secretary Cheney has already testified before this committee that with the projected end-strength reductions, we probably could not do what we did as quickly as we did, if necessary, 5 years from now. I would like a short comment on that.

Second, where it fits your command, I would ask that you respond to the impact of force reductions, such as: the reduction in battle force ships from 545 to approximately 450, including 14 to 12 aircraft carriers; the reduction in Army divisions from 28 to 18; and Air Force reduction from 268 to approximately 180 strategic bombers. I would also add that, despite rigorous and continued Soviet ICBM modernization, Air Force cut backs in MK test launches will force a shut down of the only hot ICBM production line. Let me start with you, General Vuono, concerning end-strength and your Army divisions down from 28 to 18.

General VUONO. As I said in my opening remarks, we are going to as low as we have been in the Army since before World War II. This is primarily because of the change in the international environment, but it is also because of budget levels. We have been given only so much money and we have made a conscious effort to protect readiness and quality of the force. To accomplish this, we had to generate resources through a reduction of manpower and a reduction in force structure. And that is what we did.

Is that a concern? Certainly it is a concern. Can we go any lower? Absolutely not. Would we like to have more? Certainly. But you are not going to have more, given the funding levels. There are reductions we can make as a result of the change in the international environment and we have done that. I would urge that we proceed carefully in the future, and if we see any changes in the environment, we had better step in and relook our force levels.

What does this do to us in the future? It is a balanced structure as much as we can make it in terms of the land, sea, and air phase of our operation. It means that as we reduce, we lose some flexibility as we go down to these levels. But the guiding principle must be, as we reduce this force, to maintain the quality of the force and the readiness of the force. We can ill afford to have an Army, Navy and Air Force of the mid-1990s that are smaller and not trained and ready. So the guiding principle must be to protect readiness and personnel.

Senator SMITH. Admiral, same question.

Admiral KELSO. I have a hard time topping his answer, Senator.

Senator SMITH. Same answer?

Admiral KELSO. I think that clearly from the standpoint that the world has changed, it allows us to perhaps be willing to take a little more risk than we did before. And, as General Vuono said, the funding is fixed and to some extent it decides what we are going to have for forces. I think, as the Secretary of Defense said the other day in his hearing, we will have to watch this world that we live in very carefully. We are on a negative slide, and something may happen that tells us that this is not the right path and we may have to correct that path. But as we go down this path it is essential that the forces we have are ready, have the right kind of equipment, and that we do not go back to the hollow sort of forces we had in the late 1970s, because if we are asked to respond we want to do it in the right way, sir.

Senator SMITH. In the interest of national security, if it required unfixing the so-called fixed budget, you would unfix it? You would recommend that?

Admiral KELSO. We certainly would.

Senator SMITH. General Gray, do you want to respond?

General GRAY. We are very concerned, of course, about the future. We have a force structure and capability that has been part of the law since 1952. At that time, Congress recognized the need for a expeditionary and sustained power projection capability, with all that means with respect to contingency crisis and response. When we look at the end-strength plan for 1992 and 1993, as contained in the budget that is now on the Hill, we think we can give the Nation the kind of Corps that they have come to expect. People have always been our strongest resource, as you know. But when we go beyond that in the outyears, then we are clearly going to take a serious reduction in capability if we go below the framework that has been set forth in 1992 and 1993.

I am also concerned about the sealift issue. While I am fully supportive of increasing our sealift, I note that because of the dollar allocations we are giving up some of the most flexible sealift we have—a considerable number of amphibious ships over time. In my judgment, we need to look very carefully at that. I will remain concerned about this issue in the years ahead.

Senator SMITH. General McPeak?

General MCPEAK. I subscribe to the views of my colleagues, sir. When I joined the Air Force in 1957, which was a peace year par excellence, the defense budget was 60 percent of the Federal budget. I do not know what it will be next year, but it is around 25 percent.

Senator SMITH. Less.

General MCPEAK. Less. So I see no realistic prospect that we are going to reverse this long-term trend and shift in domestic priorities. But it is worrisome. A year ago, very few people predicted that we would have to go to the Persian Gulf and fight Iraq, with some honorable exceptions, but in general it was not a predicted event. Indeed, the end of the Cold War had very few folks who said tomorrow the Berlin Wall is going to be torn down and so forth. So it is an unpredictable place and it makes me a little uneasy to see the Air Force draw down to smaller than it was since before the Korean war, 193,000 in end-strength since our recent peak in 1986. So I am concerned, and I think all of us are.

Senator SMITH. Thank you. Thank you, Mr. Chairman.

Senator EXON. Thank you, Senator Smith. I believe next is Senator McCain.

Senator MCCAIN. Thank you, Mr. Chairman, and my thanks to the witnesses. It has already been a long afternoon and we appreciate your being here. I guess the question that I have is the same one I asked the CINCs when they came here, and I would like to start with you, General Vuono. Given the projected size and shape of your service in 1995, do you think it would be possible to repeat Desert Storm?

General VUONO. We would be able to repeat Desert Storm. We probably would not be able to do it along the time lines that we have done it in this operation, and we will have lost some flexibility. We could do it, but again not on the time lines we have done it, in my view, on this operation.

Senator MCCAIN. Admiral Kelso?

Admiral KELSO. I certainly do not think we would be able to do it in the same way, at the same speed, and certainly we would be in a position if we did another Desert Shield to have very little left to respond with to anything else that might be taking place in the world at that period of time.

General MCPEAK. I think that is the key point. We could do it. We would have a much larger fraction of Guard and Reserve forces involved. For Desert Shield we had about a wing over there of tactical capability. It would have to be really plussed-up considerably in 1995, and we would have to take some risk in other parts of the world. On the Korean peninsula, for instance, we would have to maybe pull some forces out of there, which we did not have to do this time, and tempt North Korea to do something silly. And there are other parts of the world where we would have to take that kind of risk in 1995.

General GRAY. We had 90 percent of Marine Corps operating forces deployed throughout the globe during Desert Shield and Desert Storm. Given the outyear budget outlook, our ability to repeat this type of thing for the country in 1995, would be extremely doubtful. You are going to drive up the risk, and there will be things that you are going to be unable to do.

Senator MCCAIN. Thank you. General Gray, from talking with Marines—and they are very outstanding—over in Iraq and in Saudi Arabia, they felt there was a need for a better night capability for your helicopters, and an all-weather capability. Would you agree with that?

General GRAY. Absolutely. A night fighting capability for our helicopter fleet has been our number one aviation priority for the past 4 years. We have pursued a better night capability for our AH-1W, our gunships, which we believe are superb. Likewise, we have pursued a better night capability for all of our helicopter fleet. As the Senator well knows, it is the avionics that drive up the cost of systems. Advanced avionics have been a difficult affordability challenge for us through the years. But providing a night-fighting capability for our helicopter fleet will continue to be the number one priority.

Senator McCain. General Vuono, General Schwarzkopf described the performance of the Apache helicopter as absolutely superb. Would you agree with that?

General Vuono. Absolutely. It was superb in its employment, and during the operation our readiness rates were extremely high. The lethality of the system proved out with all the weapons that we had on it from the day the operation started until it ended. It gave us a fantastic capability, particularly as the weather got bad over there. In short, the aircraft performed the way many of us expected it to perform, Senator.

Senator McCain. General Vuono, this is not an easy question, but how in the world is it possible for a weapons system to perform in the superb fashion in combat that the Apache did and yet undergo the incredible—and this is not unique to the Apache—barrage of criticism, scathing condemnation, and denunciation, led by the green eye-shaded GAO and other dubious military experts?

General Vuono. Well, we sometimes use the term "military experts" loosely. I would say, Senator, that we knew we had a good system. We had to stay the course with the system, and it proved out. It is unfortunate that you had to have a war to demonstrate what we knew—that it had a tremendous capability for this Nation. I do not think that this is the last time that critics are going to take us on on our systems. We meet the requirements, we test the systems, and nobody wants to put better equipment into the hands of our soldiers, sailors, airmen, and marines than we do.

Senator McCain. You are aware that even when our soldiers were trying to maintain the equipment and ready themselves for combat, the GAO was over there looking over their shoulders in Saudi Arabia.

General Vuono. Yes, sir, I am very, very much aware of that, and I do not like it.

Senator McCain. Is that not outrageous?

General Vuono. I did not like it.

Senator McCain. Well, I really think something ought to be done about that. I am sick and tired of these green eye-shaded analysts interfering with the men and women who are preparing for combat, and I think it is outrageous, Mr. Chairman. That kind of behavior and the people responsible for it, ought to be, at least, well-publicized for American citizens to judge. I spoke to several of our brave soldiers who were trying to maintain those aircraft under very difficult conditions, and to prepare them for combat. Instead, they spend hours answering questions from GAO analysts. I think that there is an appropriate time for the GAO to do its investigations, but not when the Commander in Chief and the American people are expecting them to be able to perform in combat.

Chairman Nunn [presiding]. Which system was that?

Senator McCain. The Apache helicopter, Mr. Chairman, and they were over there for 5 or 6 days and then General Pagonis, who you know is being lauded, and deservedly so, as having done almost a miraculous job, had to spend a couple of days with these people answering their idiotic questions when he is trying to supply and equip his soldiers, marines, and sailors for combat. I am glad to hear you say you do not like it, General Vuono, and I am sure that you are restrained when you say that.

General **Vuono**. Very much so, Senator. [Laughter.]

Senator **McCain**. I think maybe there ought to be some kind of investigation of the General Accounting Office. [Laughter.]

Admiral Kelso, I am also concerned about the battleships. I understand that around Kuwait airport, the battleship played a very important role. I believe that we have made a case for at least attempting to or at least examining the viability of maintaining two battleships in our Navy. They have the awesome capability in cruise missiles and with their 16-inch guns. I do not know if we have another similar capability. Do you, Admiral?

Admiral **Kelso**. There is no similar capability to the 16-inch guns anywhere else in the way of gun firepower, and with the ordnance that you can carry on the battleship you can put a lot of rounds on target in a short period of time. Senator, I agree completely with the efficacy of the battleship. The decision to remove the battleship was purely one of money and people, and I think we all sort of feel that way about it. We agree that it is a great capability.

Senator **McCain**. Thank you, Admiral. Thank you, Mr. Chairman. My time has expired.

Chairman **Nunn**. Thank you, Senator McCain. Senator Wallop.

Senator **Wallop**. Thank you, Mr. Chairman. Again, gentlemen, so many hats have been off to you that one more may be scarcely noticeable, but it was a really very impressive performance. I have to say that the state of training and the state of readiness of all the armed services was just beyond what the Nation had been led to expect it could expect, and certainly beyond what any of us would have been able to predict.

In line with Senator Smith's question, I think I would say this, that the fact that funding is fixed is our problem. But what the fixed funding does is your problem, and we need your advice. I understand and respect your willingness to proceed under the direction of civilian leadership, but absent your counsel the civilian leadership, including that in Congress, is scarcely able to make the kinds of judgments that have been so well vindicated by the troops that you were able to put into the field. I thought the budget was ill-advised last year, and I think I have seen nothing this year that has changed my opinion of that.

I would make one other observation. That is that there is really only one thing now that threatens Americans in their homes and in their jobs, and that is missiles—the Soviet strategic and Third World terror. It is my hope that we take a look. The one needs deterrence; the other needs defense, and defense can do both.

General McPeak, I notice in the Air Force report to the 102d Congress that in nuclear deterrence you say that deterring nuclear attack will remain the Nation's highest national security priority. Then you go on. Early force reductions must be carefully considered in order to preserve subsequent force structure options and not remove incentives for the Soviets to seriously negotiate an equitable START Treaty. Then you go on to say even after a START agreement is in force, the Soviet Union will retain more than enough nuclear weapons to destroy the United States. That brings me to the question. Why do we essentially abandon the MX or the Peacekeeper?

General McPEAK. We are trying to build a balanced Air Force that has a variety of capabilities. Nuclear deterrence is the most important one of those. But I guess it is a judgment call. We have a fielded Peacekeeper force of 50 missiles, as you know. We have bought enough missiles to continue to do the operational testing and training that we think we need to do through the projected useful life of the missile. So on balance, when we look at the triad and look at our needs in the manned bomber area and we look at what the Navy is doing with the undersea part of it, and when we look at our own ICBM modernization program that is proceeding and will continue to give us options for the future, depending on how the START talks go, I guess in balance that all adds up to a reasonable program.

Senator WALLOP. Well, it seems one of the lessons that came out of the Gulf region is how devilishly difficult it is to find a mobile missile, to attack it before it shoots. So that brings me to a couple of things. One, if it is devilishly difficult for us, it has to be for them on that side of it. The other side of it is—and, General Vuono, hats off to the Patriot crews—if we are not going to make them mobile, then we at least ought to defend them. It seems to me that the judgment has to come in there somehow. When we take your words—and I agree with them—and look at the one thing left that can fundamentally threaten the homelands of America, I do not think the Soviets can at this moment make a credible conventional projection of force into the homeland, but they certainly can strategically with missilery.

General McPEAK. If we do not get a verifiable START agreement that reduces the number of warheads on each side, then I think we have to reopen the whole matter of mobility for our land-based missile systems, including Peacekeeper Rail Garrison. So our forward projection is based on keeping that option open while we watch what is happening in the START arena. So I agree with you in that regard. I also agree with you that it is difficult to find mobiles and that, therefore, it is probably a good idea to try to work on some ballistic missile defense for the United States. As you know, that is being done in the SDIO. It is not an Air Force program.

Senator WALLOP. General Vuono, talking again about things that work awfully well, the MLRS rockets had pretty wonderful success. They were tremendous force projection for you over there. I note with some dismay that the budget request does not include any funding for MLRS in 1992.

General VUONO. Well, we are hopeful that we will be able to replenish the stocks that we fired on the operation; I believe we will do that. It becomes, Senator, a matter of affordability. We believe that what we have in the inventory and what we will replenish will provide us what we need for the future. But, just like a lot of areas we talked about today, it becomes a matter of affordability and we have to establish some priorities across the force. None of us are happy with those priorities we have to establish.

Senator WALLOP. Again, I would just go back to my first statement. The fixed funding is our problem and can be fixed by us, but what the fix does is your problem, so it is my hope as we go along that we hear clear statements of what is needed. Whether or not it is what has been asked for, we really need to know what it takes for you gentlemen to perform as you have performed in the last few months. It would be a shame for the United States to find itself in need of such a projection of force again and unable to do it. All the good that came of this would be gone.

Let me just ask one last question, and it goes to both General Gray and General Vuono. There was an unprecedented level of cooperation between services. There was quite a bit of sharing of equipment. I wonder if each of you could comment on the equipment that was shared between your services, borrowed or loaned. Just give us a couple of items that were and then maybe for the record we could have a complete listing of it.

General VUONO. Well, I will go first here. Just to name a couple that we have already talked about here, the Abrams tank and the provision of the MLRS were two that I think were helpful across the entire force.

Senator WALLOP. General Gray, how is it that the Marines can step right in to the use of these? Do you train on cross-used equipment? It is quite an achievement. This is meant to discover how we benefit by it.

General GRAY. Yes. I would like to be able to answer this for the record. Since the recent visit of your distinguished colleagues to the Gulf, I have heard comments that the Marine Corps had to borrow an awful lot of equipment to be able to do what we had to do. So there is no misunderstanding, I would like to set the record straight. Fundamentally, what we did in Kuwait is what we always do. The amount of equipment used was not unprecedented when I review my own combat experience over the past 40 years. When we have a capability within our services and someone else needs it, we give it to them. For example, we provided our fleet hospital capability to our colleagues out there—not that they did not have some medical capability as well. We also provided a lot of food and water to our sister services for several months during Desert Shield. This is the kind of thing you do in war. We always had a long-term plan to introduce the M-1A1 tank into our tank battalion. Since the Army had already fielded the M-1A1, we trained our tankers through a common new equipment team training system which soldiers and marines do as a matter of routine. So Marine instructors teach M-1A1 tank maintenance and gunnery at Fort Knox. In a similar vein, Marine instructors teach and provide 70 percent of the instructors in artillery gunnery at Fort Sill. This is the type of sharing that you would expect from your Armed Forces.

In concert with the Army, we were able to move up the fielding of enough M-1A1 tanks with the 120-millimeter gun and upgraded ammunition to equip one of our tank battalions. Our primary interest was to get the NBC protection that it afforded in theater. To get the tanks to I MEF, we provided shipping that was allocated to the Marines. At the same time, we were able to provide shipping space for the armored combat excavator, the M-9, so that both soldiers and marines would have that capability for breaching operations.

In summary, there were a number of cooperative-type efforts that went on. These efforts were based on the fundamental idea that there are no crowded battlefields.

[The information referred to follows:]

Equipment Shared Between Military Services

RESPONSE FROM GENERAL VUONO

The following equipment was loaned between the Army and Marines in support of Desert Storm/Desert Shield:

Equipment	Quanity	Source	Receiver
Night-Vision Goggles	700	Army	Marines
IR Night-Sight Scopes	69	Army	Marines
F–14 Communications Interceptor	1	Army	Marines
Tactical Commanders Terminals	3	Army	Marines
Ground Station Monitor Module	1	Army	Marines
M1A1–HA Abrams Tanks	60	Army	Marines
Anti-Mine Tank Attachments	20	Army	Marines
M9 ACE Earthmovers	30	Army	Marines
Armored Vehicle Launch Bridge	2	Army	Marines
Hell-Fire Missiles	1,442	Army	Marines
Shoulder-Launched Weapon	150	Marines	Army
UHF Radios (PSC–2)	10	Marines	Army

RESPONSE FROM GENERAL GRAY

As you would expect, the list of equipment the Marines borrowed is longer than the list of equipment the Marines loaned, because the Army possesses a larger inventory and more items of specialized equipment than the Marines. However, there was more Marine Corp/Army mutual support in Southwest Asia (SWA) than just loaning equipment. Some supplies, services, and facilities were also shared.

Marine deployment principles and methods allow us to arrive at an operating area with full equipment allowances and significant amounts of supplies, generally at least 30 days' worth, on hand. Deploying Army units may have fewer supplies than this with them on arrival, making them more dependent on rapid development of theater resupply lines and theater logistics support functions. Theater operations plans and orders typically assign theater level support responsibilities to component commanders, often on the basis of "dominant user" criteria.

For Operations Desert Shield/Desert Storm, the Army, for obvious reasons, was directed to assume very demanding logistics support functions throughout the theater. These responsibilities were to take effect at a specific time, such as C+60, C+90, etc. (Note: C-Day was August 7, 1990). Early in Desert Shield Marines helped Army organizations in SWA with specific supply requirements. As Desert Shield evolved and the theater matured, we relied more on the Army for those common support responsibilities it was charged with, and there were fewer occasions for the Army to request Marine assistance. The developing plan for ground operations in Desert Storm precipitated loans of equipment specially required for the scheme of maneuver, and also precipitated cross-training and "loans" of important knowledge and skills.

Specifically, the Marines drew the following support from the Army [this list has also been inserted in previous testimony]:

Rations - 25,000 short tons (Meals, ready-to-eat (MREs) after C+90; also B-rations after C+120).

Individual/unit equipment - 100 general purpose tents.

Fuel - Theater management of fuel which the host nations provided (including linehaul support, distributing over 6 million gallons to forward fuel dumps).

Ammunition - 1,800 short tons ground munition and some aviation ammunition items (30 ground ammunition types and these aviation ordnance items: 4,400 2.75" illumination warheads, 1,148 Hellfire missiles, and 1,821 TOW missiles).

Major equipment end items - 60 M1A1 tanks, 33 cleared lane marking systems, 30 flipper mine dispensing systems, 30 M9 armored combat excavators, 1 battalion countermine set, a tactical petroleum terminal, and 30 miles of fuel hose line.

Medical supplies - The Army provided all common item supply support for medical supplies.

Services - On four occasions the Army provided 10 heavy equipment transporters to haul Marine tracked vehicles; an Army logistics support vessel (LSV) lifted 5,261 short tons via coastal waters to take some pressure off land supply routes; an Army reverse osmosis water purification unit mounted on a barge provided 12 million gallons of water to forward Marine units.

For our part, the Marines provided the Army this support, mostly, but not exclusively, last fall:

Rations - 15,600 MREs.

Fuel - Distributed 1 million gallons bulk fuel, and various packaged petroleum, oil, and lubricants (POL) products.

Ammunition - Over 1,000 short tons ground ammunition, which included 150 shoulder-launched, multi-purpose assault weapon (SMAW) launchers with 600 practice and 5,000 high explosive rounds, 3,600 SMAW 9mm spotter rounds, 25,000 signal/illumination rounds, and 500 rocket motors for line charges. (The Marine Corps provided well over 95 percent of the ammunition Marines needed in SWA from Marine Corps prepositioned war reserve stocks; spot shortfalls were made good by drawing from Army common item support, as noted above. In turn, the Marines were able to assist the Army in filling certain Army shortfalls, as described in this paragraph.)

Major equipment end items - 10 AN/PSC-2 Digital Communications Terminals; 25 M240E1 machineguns; 13 Marine Corps Light Armored Vehicles (LAVs). (These transactions were conducted in CONUS by Headquarters, Marine Corps, the Marine Corps Research, Development, and Acquisition Command, and Commander, Marine Corps Logistics Bases, with the Army. The Army borrowed terminals and machineguns specifically for Desert Shield; it borrowed the LAVs prior to Desert Shield, for evaluation, and subsequently deployed the LAVs to SWA with the 82d Airborne Division.)

Repair parts - Various replacement parts and maintenance float items.

Miscellaneous - 3,000 to 4,000 BA5600 batteries.

Services - Mine counter-mine training for various Army units; threat mine training; one-shot line charge training; facilities and space in the MARCENT area for 3d Armored Cavalry Regiment to stage and paint vehicles at the port; over 10,000 gallons of water a day for Army units during certain periods, for a total in excess of 1 million gallons.

General VUONO. Let me just pick up on that because I think what you saw here was a great success story. We keep talking about it being an air-land-sea campaign, and that is what it was, not just in name but in action. I think what we take away from this is that we have a range of capabilities across the force and we provide those capabilities whenever and wherever they are needed. I think that is one of the strengths of our military.

Senator WALLOP. Mr. Chairman, my time is up. I want to say this is meant to elicit how we can capitalize on a capability, not to criticize. General Gray, I am sorry you feel defensive about it.

General GRAY. Sir, my comments were not directed at you at all. It is just our tactical intelligence on the Hill is pretty good, and we picked up these sensings. I for one have always said that your services know how to operate together. We do operate together. We have demonstrated it once again. In my view, it does not really have anything to do with the Goldwater-Nichols Act or anything else like that. Warriors have a sense of sharing in combat, and we have been doing it for a long, long time. I think the Nation should be proud of what our men and women in all the services have done.

Senator **Wallop**. Well, as an old rancher who could never have run my place without my neighbor's equipment, I understand what you are talking about. [Laughter.]

General **Gray**. Well, of course, we are the world's leading experts at that type of thing. We have been known to do that.

Senator **Wallop**. Thank you. Thank you, Mr. Chairman.

Chairman **Nunn**. If they are borrowing it formally rather than getting it in other ways, it would be a switch from historical patterns, wouldn't it? [Laughter.]

General **Gray**. That is true, yes.

Chairman **Nunn**. Usually there are more surreptitious means of gathering equipment.

General **Gray**. It depends on how quick you can get them and paint them green and put a Marine number on them. [Laughter.]

Chairman **Nunn**. Senator Levin, have you had a round?

Senator **Levin**. I have.

Chairman **Nunn**. Have you had a round, Senator Thurmond?

Senator **Thurmond**. No, I have not.

Chairman **Nunn**. Let me call on Senator Thurmond first. He has not had a round.

Senator **Thurmond**. Gentlemen, we are glad to have you with us. We appreciate your presence. General Vuono, as you indicated in your prepared statement, the Army called up almost 150,000 soldiers and over 1,000 units. The Army, however, failed to call up senior Reserve component units, such as the 377th Theater Area Army Command, the 1430th of the 143rd Transportation Command, or the 335th Signal Command. All these commands were aligned with the Central Command and allegedly met every readiness standard. Would you mind explaining why you chose not to call up these units?

General **Vuono**. Let me first say, Senator, that, as I said earlier, one of the great successes was the performance of our Reserve components. We called up those Reserve components based on the requirements that we were filling for the theater. The theater commanders determined, based on the plan, what requirements they would need to meet their shortfalls, and those are the units that we called up. We did not want to call up any units that were not required in-theater.

Senator **Thurmond**. In other words, you did not need them; is that it?

General **Vuono**. That is right.

Senator **Thurmond**. General McPeak, the Air Force has historically had an exceptional rapport with its Reserve component forces. I note in your statement that the Air Force is shifting a high percentage of its forces to the Reserve components. Would you describe the type of force you are shifting to the Reserves?

General **McPeak**. Well, it is in just about every mission category, Senator Thurmond—tactical fighter, tactical reconnaissance, airlift, both tactical and strategic. By the way, we may need a little help there from the committee. In last year's authorization language we were directed to transfer the entire tactical airlift mission to the Reserve component. I think it is in general agreed that that is not a very wise thing to do.

I believe the committee was concerned that we, the Air Force, had never signed up to a reasonable level of modernization for the tactical airlift component, and I agree to that. When I came in we put a program in, and it is in the budget, to begin to purchase C-130Hs for the regular Active component. So there I think we got the message, and you ought to give us a little more flexibility there rather than continue to work us toward moving that whole C-130 force into the Guard and Reserve.

We would have a very difficult time manning the units in Japan and in Germany out of the Guard and Reserve. Moreover, the CINCs, I think, are pretty well on record on this one. Especially General Stiner, with his Special Operations Force, does not see how he can do it if it is all in the Guard and Reserve. So in my judgment that does not make good sense and you ought to ease that limitation you wrote into last year's bill.

But I have strayed away from your question. Except for the nuclear deterrence business, just about every mission category in the Air Force has a substantial Guard and Reserve component, and some of them are 100 percent. For instance, the CONUS-based interceptor force that provides the air defense against the air-breathing threat is entirely Air National Guard. So it is in every mission category, Senator.

Senator WARNER. Would the Senator yield? Are you going to formally request relief on that C-130 problem? I think it is an important point.

General MCPEAK. Yes, sir.

Senator WARNER. Is it part of some package?

General MCPEAK. Well, right now we are working on the language that says we must have a study back over to you, I think in June.

Senator WARNER. Make sure we understand the problem as you have explained it. I think it is very clear.

General MCPEAK. We would like to have that provision relaxed because there is a lot of work going into that study, and it really makes no sense at all to move a whole mission category like that into the Guard and Reserve.

Senator THURMOND. The next question I believe has been touched on, but I want to ask you. General McPeak, in recent testimony before the committee, Secretary Cheney described Soviet strategic modernization as robust. He particularly pointed out the ongoing Soviet modernization of the SS-18 heavy ICBM and the five or six new long-range ballistic missiles under development. In light of continued Soviet ICBM modernization and current problems we face in START negotiations with the Soviets, how can the United States shut down its only hot ICBM production line, the Peacekeeper, this year? Have you conducted a serious analysis of the impact of closing the Peacekeeper on future ICBM production capability, such as the Small ICBM and, if so, would you make it available to this committee?

General MCPEAK. Yes, sir. I will do that for the record. But I think you have hit the key point, and that is we have to keep our eye on the progress in the START talks.

[The information referred to follows:]

PEACEKEEPER TERMINATION

The Air Force has completed deployment of 50 Peacekeeper missiles in Minuteman silos. By congressional direction, only 50 missiles will be deployed, irrespective of the basing mode. The missiles being produced today will be used to replace deployed missiles selected for operational testing. In the past, the Air Force has purchased test assets for missile programs based on classical statistical testing models. This has proved to be very effective in identifying and correcting system anomalies which are normally found with any new, high technology weapon system. The initial test and evaluation effort with the Peacekeeper missile produced an unprecedented success rate. This record, coupled with the proven accuracy of the ICBM engineering estimates and current fiscal realities, led CINCSAC to lower the test rate from the classical statistical level of seven per year to three per year. Testing three missiles per year through the design life (15 years) requires a program buy of 114 assets; we have met this milestone in fiscal year 1991.

No formal analysis of the impact of Peacekeeper production shut down on future ICBM production capability has been completed. At "first look," we expect the shut down will contribute to erosion of the industrial base, particularly in the space and missile sector. However, program curtailments are necessary in our current constrained fiscal environment, and considerable missile related activity remains, including development of the Small ICBM. In this case, it is the Peacekeeper's outstanding record of successful test flights which makes the early production shut down possible.

Senator THURMOND. Admiral Kelso, if our treaty obligations remain the same as the ~~size~~ of the fleet declines, can the Navy maintain its 6-month deployment cycle and, if not, how will it change?

Admiral KELSO. Well, we certainly cannot keep the 6-month deployment cycle that we traditionally have kept in some areas, but we can reduce the number of ships in a battle group. We can move ships around in a more flexible way than we perhaps sometimes have in the past. We will try to operate the fleet in such a way that we maintain the quality of life goals that we have set for our sailors and, as we start to draw down from Southwest Asia, we are working back toward that now, Senator.

Senator THURMOND. General Gray, to what do you attribute the Marine Corps Reserve combat forces readiness? I understand that your Reserve combat forces did not have to undergo the extensive training required by some of the National Guard combat units.

General GRAY. Consistent with the law, we embrace the concept of a balanced air-ground logistics team under a single commander for both the Active forces and the Reserve. Within that constraint have a totally integrated selected Marine Corps Reserve and Active structure. As a result, there are common command, common control, and common training and education processes, a common leadership philosophy and common logistics support in both the Reserve and Active forces. We also endeavor to buy modern equipment for both the Active and the Reserve components.

The philosophy of preparedness that we stress as the Nation's expeditionary force in readiness is built around the idea that the Active force must be prepared to go anywhere in the world and operate for 60 days without calling up the Reserves. As a result, we did it properly, and it paid great dividends. Nevertheless, we require our air units to be fully combat ready in 7 days and the ground units within 30 days. We are very proud to report that our Reserves can meet this challenge. For example, a Reserve artillery battery from Richmond destroyed a tank and a mobile rocket system with direct fire in the battle south of Kuwait City airport.

In another instance, when our 1st Division command post was being attacked by two armored brigades, three young reservists—a sergeant, a corporal, and a lance corporal—were herding 250 Iraqi prisoners through the middle of the firefight. They were taking the Iraqis to the rear, unaided by technology, but doing what must be done. So we are very proud of our people.

Senator THURMOND. Thank you very much. There are 4 minutes left to vote. We are going to have to stop now. I want to thank you gentlemen. I have a few more questions I will ask for the record.

Senator LEVIN [presiding]. Just a couple of quick questions. General McPeak, you have made reference a couple of times to the START negotiations. Do you believe that the START agreement, as currently outlined, is in our national security interest?

General MCPEAK. Yes, sir.

Senator LEVIN. One other question about the F-16. You have proposed now to terminate both the F-15E and the F-16 fighter production, and some of us are worried about the industrial base issue and what is going to take the place of the F-16. Can you comment on both of those? How will you modernize the F-16 down the road, with all your eggs in the basket of the advanced tactical fighter?

General MCPEAK. I share your concern, Senator, and I am afraid I do not have any real good ideas about how to do that. We do not need an F-16 replacement—in other words, a multi-role fighter—until around the year 2005, 2010. We are getting F-16s and F-15Es, both multi-role fighters, off the production line now, so they are brand new in 1992-1993 and they should last for 20 years. So we do not need a multi-role aircraft for some time. Our most important requirement now is an F-15C replacement. That is the so-called advanced tactical fighter. We hope to field that just after the turn of the century, and that will keep some kind of industrial base going but a pretty skinny one. So I think you are right to be concerned about it.

Senator LEVIN. Thank you. Senator Warner.

Senator WARNER. Mr. Chairman, Chairman Nunn, before departing, asked if our witnesses would take a short break, and then he will resume the hearing when he returns.

Senator LEVIN. Thank you. We will take about 10 minutes.

[Recess.]

Chairman NUNN [presiding]. Gentlemen, I hate to keep interrupting. I assure you that this is the last one. I hope we can wrap this up because I know you have been here for a long time. We just cannot control Senate votes, and I know you understand that.

Let me ask a few final questions here. General McPeak, I think the world now, because of television coverage of the war, understands something about the F-117 and particularly its survivability and its accuracy. That is the stealth fighter. Of course, the Air Force also used the B-52. So you had from the very modern to the venerable B-52. Given the importance of air power in this campaign and the value of the stealth, do you think that we will be having conventional applications of the B-2 bomber in future years? Is that going to be an important mission, or is it strictly going to be the nuclear mission?

General MCPEAK. In my judgment, sir, the conventional applications of the B-2 are far and away the most interesting. Mind you, if our deterrence works, we will never use the B–2 in a role of nuclear warfighting. That is the principal justification for having it. But it is a role in which, if we succeed, we will never use it in that role. It is only if we fail that we will use it as a nuclear warfighter. On the other hand, it is easy to visualize situations in which we would use it in conventional warfighting. It is capable of getting to any spot on the surface of the globe in hours. It can do it with one refueling from secure bases here in the continental United States or in a couple of overseas bases, Guam and Diego Garcia.

Chairman NUNN. It can do what?

General McPEAK. It can reach any spot on the globe with one air refueling operating out of these secure air bases.

Chairman NUNN. How does that compare to the B–52 today or to, say, the B–1?

General McPEAK. Well, the B–52 or the B–1 both would require more than one refueling to give you global coverage.

Chairman NUNN. So it carries more fuel?

General McPEAK. It is more efficient. It has better fuel specifics. Because it is a flying wing, all parts of the aircraft generate lift. There is no parasite drag, and you get a considerable payoff just in the efficiency of the airfoil. So, in my judgment, it can go quickly to any spot on the surface of the globe and enter an engagement and achieve surprise at the same time. So it is this surprise that confers with it almost overwhelming operational advantages, and because we will be able to achieve it with a long-range system, I think it is a very, very interesting and important capability.

Chairman NUNN. Will you start out with the B–2 being used as a conventional bomber in part, or will it all be a strategic role when you first start utilizing them?

General McPEAK. I will have to provide the answer, Senator. We plan a strategic capability, but as we field the force it may well be, as in the case of the B–1, that it is an incremental capability and we start with the nuclear. I will just have to get you the answer.

[The information referred to follows:]

B–2

SAC's goal is to use the inherent conventional capability of all bombers to serve national objectives. As the B–2 becomes available, it will be identified for conventional taskings in addition to its commitment as a SIOP asset.

Chairman NUNN. Is there anything in the design of the B–2 that hurts its performance as a conventional bomber?

General McPEAK. No, sir. Quite the contrary, it has very great advantages in terms of range, payload, and conventional weapons system.

Chairman NUNN. Thank you. Let me ask each of you this question. The 1992–1993 defense authorization request proposes Active duty end-strength in fiscal year 1992 that is about 163,000 people lower than current Active duty end-strengths. As an example, the Army would be reduced by 82,000, the Navy by 24,000 from the current level, the Marine Corps would have to reduce by 12,200 from the current level, and the Air Force would have to be reduced by 42,500 from the current level. As you know, we have waived in our bill that has passed the Senate but not conference yet, these

1992 end-strengths. How realistic are the 1992 end-strengths, and what happens if we do not get that waiver through in law? General Vuono?

General VUONO. Well, I think what we will have to do, Mr. Chairman, is see where we are going to end up in 1991, because that will be the start point. Then we will look at what the options are to slope the force properly in 1992—to determine what we believe we can hit in end-strength in 1992—bearing in mind that we want to maintain readiness and take care of our people. Taking care of our people is paramount.

Chairman NUNN. I said waiver 1992 in the bill. We waived 1991 in the bill. My question really should have been what happens if we do not waive 1991?

General VUONO. Well, I hope that we waive 1991 because I do not believe that we will reach the mandated fiscal year 1991 end-strength as written into the bill right now, given where we are.

Chairman NUNN. That is because of Desert Storm?

General VUONO. That is strictly because of Desert Storm.

Chairman NUNN. You could have done it otherwise?

General VUONO. Otherwise, we would have been on the glide path for 1991, yes, sir.

Chairman NUNN. I assume, then, from your perspective it would be perfectly fair to attribute the incremental cost in waiving and incremental cost in going up in end-strength from what had otherwise been anticipated to this Operation Desert Storm?

General VUONO. Yes, sir. I think that any deviation from what the mandated end-strength was going to be by the end of 1991 is attributable to Desert Storm.

Chairman NUNN. Admiral, is that generally the same for you, or is it different?

Admiral KELSO. Yes, sir, that is true. We had kept some ships manned that we would have taken out earlier in 1991, and it depends upon how the force comes down from Desert Storm as to where the end-strength falls on that, sir. So if it comes down slowly then that would be an end-strength caused by Desert Storm above the numbers we had planned on.

Chairman NUNN. General McPeak?

General MCPEAK. Sir, we are on course. We were on course to meet our 1991 end-strength. We could still do it if pressed. It is a good thing to waive it. We will still be over, I think only about 4,000 or so, by the end of 1991. The 1992 issue is a bigger issue. If we must fund out of other parts of the Air Force program any excess end-strength that we have in 1992, then I would be hard-pressed to do it. So I would just as soon stay on course for 1992 rather than have this waived, if we end up having to rob other parts of the Air Force program to make it.

Chairman NUNN. Of course, if we waive it, that does not mean you have to exceed it. It just means you have the choice. It is not mandated by law.

General MCPEAK. Yes, sir.

Chairman NUNN. General Gray?

General GRAY. From the joint viewpoint, we support the waiver requirement, as has been indicated here by my colleagues. From the Marine Corps viewpoint, we will be within the allowed 1 percent of our authorized strength at the end of 1991.

Chairman NUNN. Thank you. Admiral Kelso, the committee noted with interest your innovative Naval Reserve concept, which you set forth in your posture statement on page 14. Of course, that is going to reduce the cost of maintaining some forces in the Naval Reserves. This involves, as I understand it, a nesting concept, where eight ships would be maintained in a more active status to train Reserve crews for another 32 ships that are in cold storage. Have you made any changes to this program as you have fleshed it out from the original concept which you and I had discussed before? Are there any other initiatives you have been able to identify for improving the utilization of the Reserves while living within the constrained resources?

Admiral KELSO. We have not done any more in the way of ships. As you know, the 1992 budget puts more maritime patrol air in the Reserve, Senator. We are looking at some of the other ships that we have operated, like TAGOS ships, to see if they might not go into the Reserve as well. So I think we will continue to look at changes to this program during the next 2 or 3 years of this budget cycle. The idea of this Reserve concept was to maintain an investment that we could regenerate within about 6 months, if we need to, by operating a few ships.

Chairman NUNN. What about the maritime patrol aircraft force structure? You are going down from 24 Active and 13 Reserve squadrons to 18 and 9. These are primarily targeted against the Soviet submarine threat, are they not?

Admiral KELSO. Yes, sir. They are primarily ASW airplanes.

Chairman NUNN. Has that threat gone down?

Admiral KELSO. Well, the threat in size has not come down any. Its operation has changed to where they are not operating as much as they did in the past.

Chairman NUNN. Do you have enough warning time on that to consider having them more proportionately in the Reserves as you draw down? Or is that warning time going to be short?

Admiral KELSO. I believe that is all right, because if you needed to you could call those forces back fairly rapidly. They will train and be pretty well up to snuff in their training. We use the Reserves on a day-to-day basis in ASW operations now, so I think you could expect to call it back fairly rapidly if you need it.

Chairman NUNN. They can move pretty quickly?

Admiral KELSO. Yes, sir.

Chairman NUNN. General Vuono, last week General Burba testified before our committee, and he said that the 48th National Guard Brigade had passed its rotation at the National Training Center with flying colors and was ready to go to combat if necessary. Do you agree with that?

General VUONO. The 48th met the training objectives that we laid out for them and did a very good job. We are very pleased with how that whole program worked out; not just for the 48th but the other two roundout brigades that we called up. We are now in the process of assessing that entire training program and that entire mobilization process to determine what adjustments we want to make in the future to the roundout brigade concept.

Chairman NUNN. General Burba said the Army was counting on continuation of the roundout brigades for later-deploying reinforcing divisions. Is that your view also?

General VUONO. Yes. We will obviously have to look in detail at the assessment, but my personal view is that there is a role for the Reserve component roundout brigades, combat brigades, in the National Guard for reinforcing forces.

Chairman NUNN. Have you been directed to do away with the roundout brigades by the Department of Defense?

General VUONO. No, sir.

Chairman NUNN. So right now, then, you are still heading in that general direction?

General VUONO. We are still heading in that general direction.

Chairman NUNN. Thank you. Any other comments that any of you have? I did not mean to keep you this long. I am sorry we were interrupted so many times, but it is unavoidable around here. Any other comments? Do you think we have missed something we need to know from you?

General MCPEAK. Mr. Chairman, I have a couple of issues that you could help us on. One is in last year's language where you told us to transfer the A-10 to the Army and the Marine Corps. At the time you gave us that instruction, we were tentatively programming to retire the A-10 in toto, zero it out in the Air Force. We have since put two wings of A-10s back in the Air Force program and another almost two wings of OA-10s, the forward air controller version of it. We are working with the Army now—Carl and I are working together—to make sure we understand the requirement for close air support and to do the best job on that we can. I think that this directive language should be reviewed by your committee, sir. It seems to me it is no longer applicable. Conditions have changed and you may wish to alter your guidance to us.

Chairman NUNN. Do you want to keep the A-10 now?

General MCPEAK. Yes, sir, I do.

Senator WARNER. You want to keep the forward attack air.

General MCPEAK. It is a mission of preference, as far as I am concerned. I would rather do close air support than any other thing we do. Now I am different in that regard from some others in the Air Force.

Chairman NUNN. Has that changed since last year, the position of the Air Force?

General MCPEAK. Yes, sir.

Senator WARNER. I think it has changed, Mr. Chairman, by virtue of a new Chief and we should adhere to his wishes.

General MCPEAK. Sir, I feel strongly about the need to work closely with the Army and do close air support. I will try to make sure that that emphasis is institutionalized, but we are hamstrung a little bit here with some of that language you gave us, sir. I respectfully request you review it.

Chairman NUNN. We will certainly take another look at it, because that is a substantial switch in the Air Force view.

General MCPEAK. Yes, sir.

Chairman NUNN. General Vuono, how do you feel about it?

General VUONO. Well, I have consistently maintained that the close air support role rightfully belongs with the Air Force. We tell them what our requirements are, and they meet our requirements.

Chairman NUNN. If they do not want them, you will take them, though, right?

General VUONO. Sir, they have the requirement, and he is going to meet it.

Chairman NUNN. They do want them now, so I guess that is strictly hypothetical. General, you had another suggestion.

General MCPEAK. I have a couple, Mr. Chairman. I hate to try your patience.

Chairman NUNN. That is all right. That is what we are here for.

General MCPEAK. Thank you, sir. We have some language telling us that we must increase the equipment authorization of all Guard and Reserve units to where it exactly matches the Active units. Again, I think that attempts to take us to task for not being forthcoming in putting mission and equipment in the Guard and Reserve, and I think the Air Force's record is pretty good in that regard. But it also is a one-size-fits-all kind of management approach to this problem. In other words, every Guard unit does not want to have 24 aircraft. It cannot recruit to maintain and equip 24 aircraft. So in a small community you might want an 18-aircraft squadron, and in a larger community a 24-aircraft squadron.

Chairman NUNN. You need some flexibility there.

General MCPEAK. Yes, sir. I think it was not a good idea to tell us that we have to get in lockstep on something that really requires judgment as each occasion comes up, especially when we have demonstrated that we are not reluctant to put force structure and equipment in the Guard and Reserve where that makes sense.

Senator WARNER. Mr. Chairman, we had that experience in Virginia, and I think the General is well-taken on that point. When we made a change of aircraft we had to downsize the numbers.

General MCPEAK. Sir, one final issue, and that is the issue of when we can enter some full-scale development on the ATF, the advanced tactical fighter. As you probably know, that has been a model program. It has run according to all of the Packard reforms and everybody else's reforms about how to do that—fly before buy, have a competition, have a flyoff, and so on. We intend to downselect and choose a contractor in April, and the program thereafter needs to enter full-scale development right away. Now we may be able, at increased cost, to stretch the thing out and hang the contractor out a little bit, put his funds more at risk and so forth, and delay signing a full-scale development contract until October 1. But it is a needless glitch in the program and is one that would just have the impact of driving up the cost and reducing the timeliness of the program. I sincerely request you reconsider whether we ought to be held to that guidance.

Chairman NUNN. When do you have to have that relief?

General MCPEAK. Well, in a perfect world we would like to downselect in April and sign a contract for full-scale development shortly thereafter, perhaps the first part of May. I am told by my helpers here that it might be that June or July would work for us.

Chairman NUNN. I had understood you had much more time than that.

General McPEAK. What bothers us is to keep the ball in the air until fiscal year 1992. Because, I think, of misguided effort to slow this program down, which has been a model program—there is no concurrency in it, we have done all the risk reduction and everything else—I think if you look at that you would agree that it probably makes sense to proceed in a timely way to full-scale development.

Chairman NUNN. General, we will look at all three of those items again. I am told on the tactical airlift—and I know that you want more flexibility on that one and I heard your previous statement—of course you have now started modernizing the Active force. For a long, long time there was no modernization going on, and it was basically, as I saw it, an Air Force Active default to the Reserve and Guard.

General McPEAK. Guilty as charged. That is wrong and we have put it right, and we have made a long-term commitment, not just a 1-year commitment, that we will modernize the tactical airlift force. We have needed to do that for a long time, and you are right to hold our feet to the fire.

Chairman NUNN. We will take another look at that and work with your people and see what does make sense. I still think that mission, a lot of it, can be performed by the Guard. I know a great deal of it already is, but I think perhaps even more. I am told that for 11 years—this may or may not be correct—the Guard and Reserve handled all the air refueling in Europe.

General McPEAK. Air refueling, sir? Not true, first of all, but that is a different subject than tactical airlift.

Chairman NUNN. I understand that. But they did perform—isn't that true?

General McPEAK. That is not true, no, sir, absolutely not. We have had a tanker task force in Mildenhall and Zaragoza and elsewhere in Europe being held by Active units as well as Guard and Reserve throughout that whole period of time.

Chairman NUNN. My understanding is it was 1968 through 1979. You check and see.

General McPEAK. Yes, sir. During some of that period I commanded one of the tanker bases in Europe, so I have some on-scene evidence about that.

Chairman NUNN. Well, we will defer to you on that one. How about supplying it for the record?

General McPEAK. Yes, sir.

[The information referred to follows:]

EUROPEAN TANKER SUPPORT

From 1968 through 1976, air refueling in Europe was conducted primarily by active-duty aircrews and aircraft attached to the 98th Strategic Wing (SW), Torrejon AB, Spain. Air National Guard (ANG) crews also operated KC-97Ls out of Rhein Main AB, Germany, from 1967 through April 1977 supporting Operation Creek Party. The normal size of the tanker force at Torrejon was 12 KC-135s, while the average force at Rhein Main was 6 KC-97Ls. As the active-duty KC-135 requirements in Southeast Asia grew, the Rhein Main ANG tankers assumed an increasing share of the European tanker activity. At the peak, ANG tankers conducted up to 70 percent of refuelings in the European theater.

In 1976, the 98 SW was deactivated and tanker operations moved to RAF Mildenhall, UK and Zaragoza AB, Spain under the new 306 SW. Also in 1976, the Air Force Reserve (AFRES) set up its first tanker unit and the ANG converted to KC-

135s. According to SAC's history of the 306 SW for 1976, ANG and AFRES tanker units "occasionally" augmented the active duty tanker force. ANG wants to formalize an agreement with HQ SAC to support European operations. AFRES tankers have also volunteered to assist when able, but there is no continuing presence. A recent SAC Tanker Study noted that Tanker Task Force refueling support will fall 39 percent short of meeting defined requirements. As the Air Force puts more tankers into the Guard and Reserves, these components of the Total Force should assume increased responsibility for these refueling commitments commensurate with their proportion of the force structure.

Chairman NUNN. Senator Warner, do you have anything else?

Senator WARNER. Just to join you and the others in saying well done to all four of these distinguished Americans and on behalf not only of yourselves individually but the many persons under your respective commands. What a proud day in America's history this has been.

Chairman NUNN. I have to ask you one other question. Did any of you, under the new Goldwater-Nichols concept, have difficulty getting your views across within the Joint Chiefs?

General VUONO. Absolutely not.

Chairman NUNN. Admiral Kelso?

Admiral KELSO. No, sir, not at all.

Chairman NUNN. General McPeak?

General MCPEAK. No, sir.

Chairman NUNN. General Gray?

General GRAY. No, sir.

Chairman NUNN. Any complaints about how Goldwater-Nichols worked?

General MCPEAK. Not in Desert Storm. I have some problems with the wickets we have to drive officers through from a career planning standpoint.

Chairman NUNN. Career planning. But I really am referencing Desert Storm. Admiral, do you have any?

Admiral KELSO. No, sir, none at all.

Chairman NUNN. General Vuono?

General VUONO. No, sir. When you have good people and everybody knows what their job is and gets on with it, it works.

Chairman NUNN. General Gray, any problems?

General GRAY. Again, sir, as you know, I really do not think that the law had very much to do one way or the other with the success in Desert Shield/Desert Storm.

Senator WARNER. We had better conclude the hearing, Mr. Chairman, on that note.

Chairman NUNN. How about anybody else? Anybody have a differing opinion on that subject? General Pagonis told me in the field he could not have done his job of logistics without Goldwater-Nichols.

General GRAY. We were able to do our job logistically in the field, and really again I do not see the impact one way or the other.

Senator WARNER. Certainly, Mr. Chairman, I would say from my discussions with a number of individuals in the three trips I made to the Gulf that Goldwater-Nichols did make a big difference on the positive side.

Chairman NUNN. That is what I heard from General Schwarzkopf.

Senator **Warner**. I feel that the President, early on and very wisely, made the decision not to micromanage the military action, delegated the responsibility to the Chairman of the Joint Chiefs of Staff, the CINCs, and the members of the JCS, and that is the chiefs of the services, and I think that is one of the major reasons that this operation had such a high degree of success from every perspective, from the tactics used to the logistics.

Chairman **Nunn**. Any other comments from any of you on that one way or the other, on how it worked?

General **McPeak**. I really feel that this was a victory of competence and, to the extent that Goldwater-Nichols drives people out of their career field so they can go do square-filling on the joint side, they become less competent in their combat tasks. So I really feel we must address this issue of how we work people back and forth into the joint specialty business and so forth so that we understand that we have to do all that. We are all signed up for jointness, but there is no substitute for knowing what you are doing in the cockpit.

Chairman **Nunn**. I agree with that. Anybody else?

General **Gray**. I would just add that I fully agree with Senator Warner's comments about the President's role in the crisis. I was not aware that his refusal to micromanage was because of the law. But for whatever reason, his leadership was superb, there's no question about that. That is the way to do it. But, I'd like to reemphasize that the success of Desert Shield/Desert Storm was due to professional execution and a thorough understanding of joint and combined doctrine; how to do what must be done. From my vantage point, the people did that and did it well. If the legislation contributed to our success, fine. You know, you do not want to rap success. But I felt all through this crisis that the framework for success was there anyway. I will leave it at that, sir.

Chairman **Nunn**. Admiral, you look like you are about to say something profound.

Admiral **Kelso**. I was just going to say that the one thing that contributed to all of it was the time we had to plan it. That was a major factor, in my view. The opportunity to train together in the field, from sea, with the Air Force, and the period of time to do that all I think had an enormous beneficial effect on it. I have always felt that if you want to do any kind of operations with mixed forces you have to plan it right, and this planning time you had here I think had a great deal to do with the success in which it took place. That was very, very important. I have not seen too many people say much about that, but I think it was extremely important to the outcome of the conflict.

Chairman **Nunn**. I remember Admiral Rickover said several times when I was present in his career, the more you sweat in peace, the less you bleed in war. I think the training time, the execution time, the planning, the exercises that go on at the National Training Center and its counterparts, Operation Red Flag that you have out at Nellis, and all of those things have really paid off.

Senator **Warner**. Mr. Chairman, I just cannot let this opportunity go. When I graduated from boot camp, General Gray, I was elected platoon leader for the day to march the troops in the final review. It was in July. It was 100 degrees and 100 percent humidity, and naturally for a 10 o'clock parade we formed up around 6:30 in the morning. [Laughter.]

Senator **Warner**. And the DI told me, he said, "Warner, you see those creases?" Now this is when we had khakis and I know you have forgotten about them, but we did have them at one time. He said, "when you march and there is eyes right, I want those creases straight." I said, "well, look here, sergeant, they are going to perspire, sweat." He said, "you just order them not to sweat today." [Laughter.]

I just had to tell that one story. That is the way we do things in the Corps; is that not right, General Gray?

General **Gray**. Yes, sir. [Laughter.]

Chairman **Nunn**. Thank you all very much. We appreciate it.

[Questions for the record with answers supplied follow:]

Questions Submitted by Senator Sam Nunn

ACCESS TO FOREIGN BASES

Senator **Nunn**. General Vuono, Admiral Kelso, General McPeak, and General Gray, virtually every administration witness has stated, as you did, Admiral Kelso, on page 2 of your prepared statement, that "we are likely to see increasing limitations on U.S. access to foreign bases." On the other hand, the same witnesses have indicated, as you did, General Vuono, on page 3 of your prepared statement, that "the growing diffusion of power around the world suggests that multilateral security arrangements . . . must continue to be developed and nurtured to enhance U.S. security and the prospects for peaceful change worldwide." Those two statements seem, at least at first blush, to be contradictory. On the one hand, the implication is that other nations will be willing to enter into multilateral security arrangements (not necessarily commitments) with the United States, but on the other hand, there is the expectation that other nations will not give us access to bases or at least will significantly limit our access to such bases. Could you clarify these seemingly contradictory statements?

General **Vuono**. I find no contradiction between the two statements. The need for multilateral security arrangements will continue to be an important component of U.S. national security strategy particularly as U.S. forces are downsized during the upcoming decade. While U.S. access to foreign bases may be limited in the future, we will work to ensure our access is sufficient to meet the Nation's needs.

Admiral **Kelso**. While these two statements may, at first blush, seem contradictory, they are actually complementary. While U.S. national strategy is centered upon multilateral security arrangements and acting in coalition with allies, it is also true that access to foreign bases has been in decline. The total number of nations and dependencies in which the United States maintains base sites has dropped from nearly 100 in 1947 to 38 today. Future negotiations, such as those occurring in the Philippines, may reduce our access even further. Our recent Persian Gulf experience, in which access rights were granted only after the start of hostilities, shows how sensitive nations can be in peacetime to foreign military presence, and how military options short of war are likely to be constrained to forces independent of bases ashore. These developments should cause us to reexamine the priority assigned to forces which can operate independently of base access and overflight rights.

In the future, we will also place greater emphasis on the potential contributions of other nations. Collective security remains central to U.S. strategy. In the past, our primary security ties and operations centered on countries with whom we maintained formal alliances. Such alliances remain a strategic necessity, but we also may see other forms of international security cooperation. The coalition of states allied in support of Operation Desert Storm may be more representative of future security arrangements that will complement longstanding treaties such as NATO. To support growing international cooperation, we must increase our training with other navies both to facilitate cooperation and coordination and to maintain our own expertise in likely operating environments.

General **McPeak**. These two statements are not necessarily contradictory. NATO is a perfect example. For the past 40 years, the Atlantic Alliance has remained together to contain and deter further Soviet aggression into Western Europe. When the Berlin Wall fell in December 1989, much of the military basis for the alliance eased. The unification of Germany last summer further indicated an evolving world situation less threatening to Europe and NATO. Yet, most Europeans want American military presence to continue during this uncertain period of transition. However, fiscal constraints and troop reductions will not permit the same troop levels abroad. These competing changes will create new, possibly more benign, military presence. Operation Desert Storm offers an example of how these relationships might evolve. For the past decade, we have created strong links with the Gulf Cooperation Council and especially Saudi Arabia. When the Kingdom was threatened, they asked for our assistance. We responded by sending our military to bases and ports readied for such a contingency. In the future, we will have fewer forward deployed troops, operate from fewer bases, and engage in less extensive exercises, but America will continue to support and nurture worldwide democratic values through our continued alliances and collective security arrangements. By shaping our forces for an expeditionary posture, we should be ready to support our allies during future crises similar to Desert Storm. This good neighbor approach couples both the reduced forward deployment and multilateral security arrangements noted by the other Chiefs.

General Gray. The seemingly contradictory statements regarding future multilateral security arrangements and access to foreign bases are not the dichotomy they appear to be. Any sovereign nation including the United States would prefer to be independent of the need for military forces of a foreign nation upon their soil. For economic reasons in many instances, and perhaps reasons of simple, strategic location, many nations must assume this burden, some willingly, some reluctantly, and they must look to a more powerful ally such as the United States to provide an umbrella of security for them from global and regional threats. As these threats diminish or, diffuse, however, or as these countries grow more self-sufficient in economic and security terms, the continuing need for a permanent U.S. presence can be seen, from their perspective, as no longer essential or necessarily desired. Hence, they might then consider or even implement more restrictive or prohibitive policies concerning U.S. presence, particularly as long as peace reigns dominant within their sphere of influence. In the event, however, that peace is elusive, a well developed security arrangement with a major power, or superpower, that allows that power access to their borders and facilities when crisis occurs, is in their best interest. Hence, from the perspective of the "other nation," the two matters are not contradictory, but rather an outgrowth of sovereign spirit. From a U.S. perspective, it is a matter of shifting emphasis—as peacetime access diminishes, more reliance must be placed upon bilateral and multi-lateral security arrangements that can be used in times of crisis. The two matters are actually complementary then, not contradictory.

FISCAL YEAR 1991 ACTIVE DUTY END-STRENGTH

Senator Nunn. General Vuono, Admiral Kelso, General McPeak, and General Gray, the supplemental authorization bill that the Senate passed March 14, 1991, would authorize the service Secretaries to waive the active duty and Reserve end-strengths authorized for fiscal year 1991. Given your current manpower situation, do you expect to request a waiver of your active duty end-strength for fiscal year 1991?

General Vuono. Yes, the Army active duty end-strength for fiscal yearn 1991 is expected to be 710,000 soldiers. The Fiscal Year 1991 Authorization Act limited the Army's fiscal year 1991 end-strength to 702,170 soldiers. The increase in 1991 end-strength is the result of delayed involuntary losses previously scheduled for fiscal year 1991. OSD has granted the Army a waiver for fiscal year 1991 active duty end-strength.

Admiral Kelso. The Navy will endeavor to meet the fiscal year 1991 end-strength as depicted in the President's fiscal year 1992 budget request. If we do exceed the fiscal year 1991 strength slightly we will still be back on the reduction slope by April 1992 and we will meet fiscal year 1992 strength limits. The Navy has already requested and received approval from the Office of the Secretary of Defense for a waiver of the officer end-strength to allow Navy to execute its manpower reduction strategy with no involuntary separations of non-retirement eligible personnel in fiscal year 1991.

General McPeak. Yes. In addition to the officer end-strength waiver approved by DEPSECDEF, which increased the officer end-strength in fiscal year 1991 to 96,660, we are projecting to exceed the total authorized end-strength of 510,000 due to Desert Storm requirements. This is because we could not totally undo our Stop-Loss program by the end of the fiscal year, necessitated by mission requirements in the

CENTCOM Area of Responsibility (AOR), the timely withdrawal of personnel and equipment from the AOR, and allowing our stop-lossed personnel transition time to separate or retire after their return from the AOR.

General Gray. Since November, the Marine Corps has been increasing its strength through "stop-loss" and the recall of retirees in order to man the units engaged in the Persian Gulf conflict at wartime levels. With the cessation of hostilities and commencement of what will be an extended withdrawal period, the Marine Corps intends to drawdown the force in a rational and objective manner without degrading force readiness. Readiness requirements and the desire for effective force management made it necessary for the Marine Corps to request that the Secretary of the Navy and the Secretary of Defense authorize a waiver, not to exceed 1 percent of the fiscal year 1991 active duty end-strength (193,735) authorized by the National Defense Authorization Act of Fiscal Year 1991.

Senator Nunn. General Vuono, Admiral Kelso, General McPeak, and General Gray, what do you anticipate would be your active duty end-strength for fiscal year 1991 and how would that compare with what you were authorized for fiscal year 1991?

General Vuono. The Fiscal Year 1991 Authorization Act limits the Army end-strength to 702,170 soldiers. The Army currently is releasing soldiers whose retirement and separations were suspended to support Operation Desert Storm. We anticipate the Army end-strength in fiscal year 1991 to be 710,000 soldiers. This increase is due to involuntary losses previously scheduled for fiscal year 1991 but delayed to fiscal year 1992.

Admiral Kelso. The Navy intends to end fiscal year 1991 at the end-strength level displayed in the President's fiscal year 1992 budget request, 569,721. This is slightly below the fiscal year 1991 authorized level of 570,500. We may, as a result of retaining ships planned for decommissioning during Desert Storm, be as much as 2,000 to 2,500 over strength at fiscal year 1991's end, but we will be back on the reduction slope no later than April 1992.

General McPeak. Based upon Desert Storm mission requirements, which will necessitate us to still have stop-lossed members on active duty by the end of the fiscal year, we expect to end the year with approximately 514,000, 4,000 above our authorized end-strength of 510,000.

General Gray. The National Defense Authorization Act of Fiscal Year 1991 authorizes the Marine Corps an end-strength of 193,735 of which not more than 19,757 will be officers. The Marine Corps has requested that the Secretary of the Navy and the Secretary of Defense authorize a waiver of the authorized end-strength by a total of 1,937 Marines (1,912 enlisted and 25 officers). This represents a 1-percent increase over the authorized strength and is required for the following reasons:

a. To ensure continued responsiveness to the needs of Operation Desert Storm. As of yet, undefined requirements for a continued military presence in the Persian Gulf combined with the logistical focus of the retrograde of equipment and the reconstitution of the three Maritime Prepositioned Force suites demand high personnel readiness. To ensure that readiness continues, the proper grades and skills must continue to be provided to COMUSMARCENT to execute his mission. Providing that support may delay planned reductions in end-strength.

b. To ensure that all Marines who are leaving the Corps after having been subject to stop loss are properly and effectively separated. We anticipate that the administrative, financial, legal, and medical needs will require some individual Marines to remain on active duty for a short time after the end of the fiscal year.

The Marine Corps will return to its programmed fiscal year 1992 end-strength reduction profile not later the end of the first quarter of fiscal year 1992.

Senator Nunn. General Vuono, Admiral Kelso, General McPeak, and General Gray, would any of you have to involuntarily separate personnel in order to comply with the current fiscal year 1991 active duty end-strength ceilings, and if so, how would you have to involuntarily separate?

General Vuono. The Army anticipates the fiscal year 1991 end-strength to be 710,000 soldiers. In order to comply with the Fiscal Year 1991 Authorization Act ceiling of 702,170 soldiers, the needed reductions would come from further accession reductions. It is too late in fiscal year 1991 to involuntarily separate soldiers and ensure affected soldiers are promptly notified as well as given appropriate time to prepare their families to transition out of the service.

Admiral Kelso. The recent approval by the Office of the Secretary of Defense of the Navy's officer end-strength waiver will allow the Navy to execute its manpower reduction strategy with no involuntary separations of non-retirement eligible officer or enlisted personnel in fiscal year 1991.

General McPEAK. The Fiscal Year 1991 National Defense Authorization Act limited the 1991 officer end-strength to 95,027 but provided SECDEF with waiver authority in order to avoid involuntary separations. SECAF requested an increase of 1,633 officers in fiscal year 1991, to a level of 96,660. This higher officer end-strength was approved by DEPSECDEF on March 8, 1991. This increase precluded the Air Force from having to conduct an officer reduction-in-force this year. However, to meet the officer strength of 96,660, the Air Force held a Selective Early Retirement Board in December 1990. Over 700 officers were selected by this board for early retirement in fiscal year 1991. Excluding end-strength requirements associated with Desert Storm, we would have been within the total authorized strength of 510,000 for fiscal year 1991.

General GRAY. Prior to Desert Storm the Marine Corps planned to reduce strength in fiscal year 1991 to meet the authorized level without heavy reliance on involuntary separation actions for which separation pay will be required. Desert Storm has not significantly altered the fiscal year 1991 force management plan. Although that plan includes some involuntary separations, most of the involuntary separations are the result of normal force management actions. Fiscal year 1991 involuntary separations include 115 colonels and lieutenant colonels selected for early retirement, approximately 200 lieutenants and captains twice passed-over for promotion, approximately 115 officers who have been retained on active duty longer than 6 years and who have not been selected for augmentation, and enlisted Marines who will be denied the opportunity to reenlist after reaching their high-year tenure points. Involuntary separations are planned for 315 officers and 655 enlisted in fiscal year 1991.

FISCAL YEAR 1991 END-STRENGTH

Senator NUNN. General Vuono, Admiral Kelso, General McPeak, and General Gray, what would trigger a need to use this authority for the Reserve components?

General VUONO. Exceeding the end-strength would trigger the need for the Secretary of the Army to use this authority; however, it is unlikely that this will be necessary for the Reserve component. For the National Guard, the strength level submitted in the President's budget for fiscal year 1991 is 447,300, which is the same as the fiscal year 1990 budgeted end-strength. The Fiscal Year 1991 Authorization Act provides for an increase in Army National Guard, (ARNG) of 10,000 personnel. Considering there will be no programmed decrease and a possible increase in the ARNG strength, no involuntary separations will be required in fiscal year 1991. The strength reductions we have planned for the ARNG during fiscal years 1992–95 will require involuntary separations; especially if we attempt to encourage significant numbers of released Active component personnel to join the ARNG.

Involuntary separations will also not be needed in the Army Reserve. Taking the effect of Operations Desert Shield/Desert Storm into account and given the Army Reserve current manpower situation, the Army Reserve will manage to a Selected Reserve end-strength of 318,700 in fiscal year 1991.

Admiral KELSO. During Operation Desert Shield/Desert Storm, the Naval Reserve stopped all screening of the Ready Reserve as directed by the Secretary of Defense. This action included holding all requests for transfer, separation, and retirement in abeyance unless such a change was required by law. Additionally, all administrative processing for unsatisfactory performance was stopped during Operation Desert Shield. Now that the hostilities have ended in the Persian Gulf, the Naval Reserve is once again conducting routine personnel processing. Based on the normal volume of those types of personnel actions, the Naval Reserve will not have to involuntarily separate Selected Reservists in order to meet end-strength ceilings. Board and administrative actions will continue to occur to shape the force. These actions include the Officer Continuation Board, High Year Tenure Board, and transferring reservists who do not have a mandatory service obligation and cannot be assigned to a mobilization billet within a reasonable period of time.

General McPEAK. For fiscal year 1991, the programmed end-strength for the Air Force Reserve is 85,591. Our current (as of March 21, 1991) assigned strength is 83,352. We do not anticipate needing an overall overstrength authority in fiscal year 1991.

However, the Air Force Reserve is planning to request an overstrength authority of 2 percent of its full-time active-duty support manning for fiscal year 1991. This will be necessary to support the Desert Storm drawdown and also to support intensified recruiting efforts required to meet unit manning objectives.

General GRAY. The National Defense Authorization Act of Fiscal Year 1991 authorizes the Selected Marine Corps Reserve a strength of 43,900. Current plans will enable the Marine Corps to comply with that authorized strength without using involuntary separations. The requirement to use involuntary separations for the Reserve component in fiscal year 1991 is considered highly improbable.

INDUSTRIAL BASE POLICY

Senator Nunn. General Vuono, as I examine your budget submission, it appears that the Army will not produce a single heavy armored vehicle through the remainder of this decade. At the same time, I understand that you are continuing to push development of an entirely new generation of heavy armored vehicles that won't be built until the next century. If we assume this plan goes ahead, does this mean that you have to rebuild an industrial base to build heavy armored vehicles?

General Vuono. The Army recognizes the criticality of preserving the heavy armor industrial base. With respect to the Army's tank program, the President's budget funds no U.S. tank procurement beyond fiscal year 1991. Under this program, new tank production for the U.S. Army ends in 1993. New tank production for the Army is not scheduled to begin until 2001. The Block III tank is the centerpiece of the Armored Systems Modernization program, and will be fielded in 2003. In the intervening years we will continue to pursue the use of foreign military sales to bridge the gap.

LEAVING EQUIPMENT IN SOUTHWEST ASIA

Senator Nunn. General Vuono, have any decisions been made on leaving in Saudi Arabia some of the ground combat equipment that was used in Operation Desert Storm?

General Vuono. At present, no firm decisions have been made on leaving equipment in the Gulf region. There are a number of proposals being considered, but any decision to leave equipment in the region must clearly be in the mutual interest of the United States and of our Arab allies and must contribute to stability in the region. The proposals under consideration encompass a broader range of possibilities than your question suggests. Saudi Arabia is only one among a number of Gulf states being proposed for possible prepositioning of equipment and supplies. No firm decisions have been made yet with respect to prepositioning equipment in the Gulf region.

Senator Nunn. General Vuono, what is the Army's position if there is no official Department of Defense position on this?

General Vuono. The Army has had extensive experience with prepositioning equipment and supplies, as you know. Both the POMCUS and maritime prepositioning programs were invaluable in Operation Desert Storm. POMCUS in Europe played a critical role in expediting the movement of armored ground forces to the Gulf and helped equip units from CONUS. The prepositioned ships at Diego Garcia were instrumental in providing critical support to the initial units to arrive in the Gulf following the President's decision to commit forces in the region.

The Army believes that both programs may have a role to play in the post-Desert Storm environment in the Gulf At this time, the Army would support reconstituting the ships prepositioned at Diego Garcia and is examining equipment prepositioning options in the region based on input from CINCCENT and our Gulf allies. Moreover, as Army overseas presence declines significantly in the coming years, it becomes even more important to invest in fast sealift to ensure rapid deployment of armored forces worldwide.

ADEQUACY OF SEALIFT

Senator Nunn. General Vuono, we usually ask the Navy to comment on sealift. In light of Operation Desert Storm, I think it is appropriate to ask the user about sealift. Are you satisfied with the sealift capability we have in this country?

General Vuono. Being able to rapidly deploy the appropriate mix of forces to crisis locations worldwide will be essential to the attainment of U.S. national objectives in the future. As I have said before, the Army must have the sealift to deploy at least two of its armored divisions anywhere in the world within about 30 days. The experience gained from Operation Desert Storm showed we were not able to do this because of a shortage of fast sealift.

Senator Nunn. General Vuono, is it adequate for the future?

General Vuono. No. In Operation Desert Storm we used all of the available U.S. ships and relied heavily on foreign shipping, and it still took us more than 5 months to get sufficient forces and sustainment to the theater. In the future, we cannot count on having the luxury of as much time to complete our deployments. Future

"Saddams" may not wait 5 months for us to build up our forces. Further, assuming the continued decline of the U.S. merchant fleet, there will likely be an even greater reliance on foreign carriers for future contingencies.

Senator NUNN. General Vuono, what should be the goal of a sealift program?

General VUONO. For the Army, the goal of a sealift program must be to satisfy the requirement to rapidly deploy and sustain forces sufficient to accomplish national objectives. As I said earlier, the Army needs sufficient sealift to deploy two armored divisions anywhere in the world in about 30 days. The Defense Mobility Requirements Study is currently being conducted by the Joint Staff in coordination with the services. In its final version, it will address the issue of sealift sufficiency and recommend the best mix, types, and numbers of ships required for this element of the strategic mobility triad (the other two being airlift and prepositioning).

Senator NUNN. General Vuono, does the Army plan to get into maritime prepositioning ships (MPS) like the Marine Corps?

General VUONO. As the future Army will be largely CONUS-based, the Nation will depend on rapidly tailorable, versatile forces to respond to crises worldwide. The positioning of unit sets afloat in a particular part of the world limits flexibility and our ability to tailor contingency-specific forces packages while providing only a marginal advantage over fast sealift, and at a much greater cost. This is the key point. When we factor in the cost of Army equipment and the life cycle cost of MPS platforms, and when we consider that a significant portion of Army equipment is not practical or is prohibitively expensive to POMCUS (e.g., aircraft), "Army MPS" does not seem to have the potential to give us as much strategic advantage as modern sealift ships. Accordingly, the Army does not view MPS as the best alternative to reduce current/projected strategic mobility shortfalls. We do, however, preposition sustainment stocks afloat in the Indian Ocean. These stockages proved very effective in supplying our soldiers in Operation Desert Storm. We plan to enhance this capability.

NAVY OF THE FUTURE

Senator NUNN. Admiral Kelso, we have read various accounts of some road map for the Navy of the future that you have apparently circulated within the Navy, something referred to as, "The Way Ahead." Could you give us some idea of what this is all about and what you are planning for the Navy of the future?

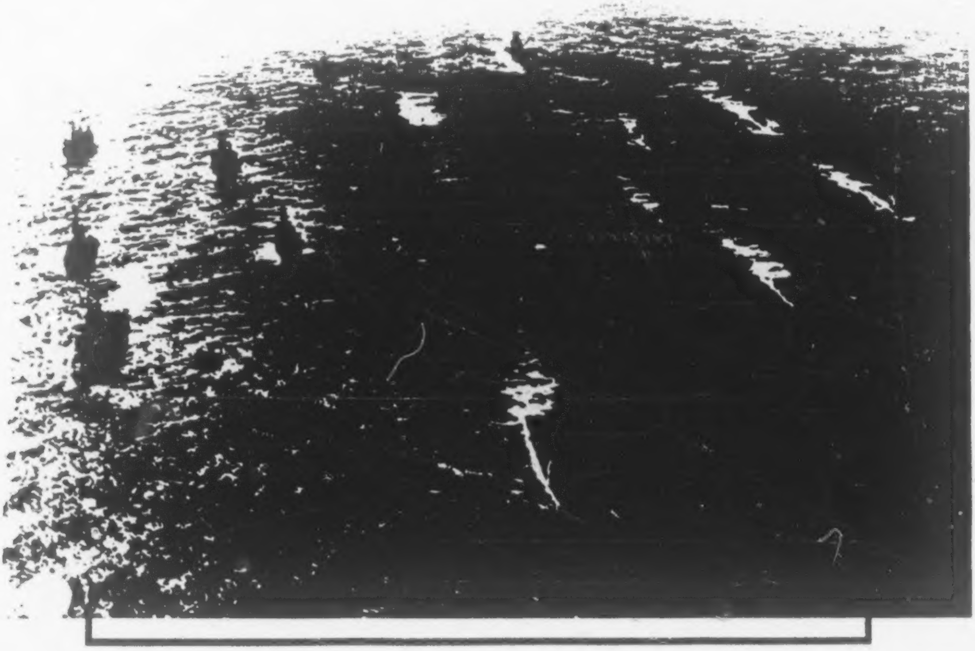
Admiral KELSO. See attached booklet.

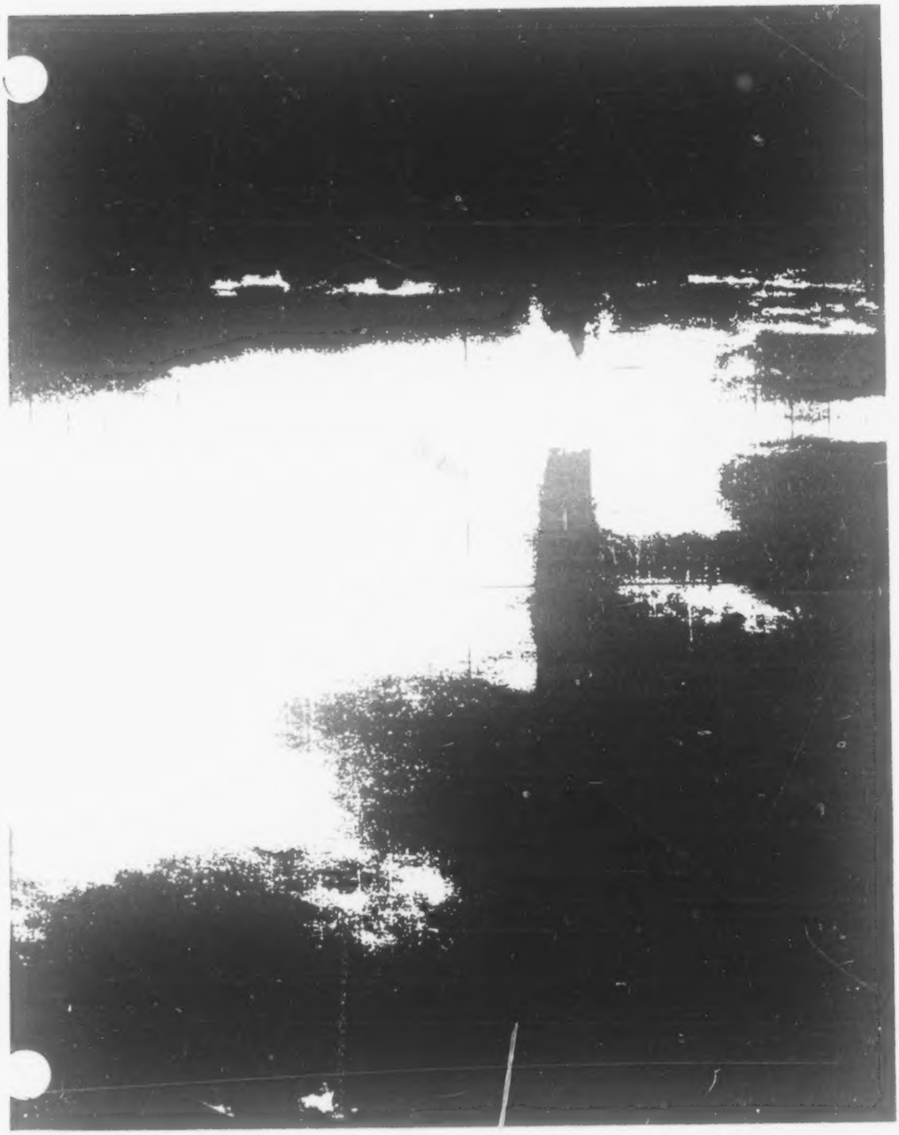
The Way Ahead

The Honorable H. Lawrence Garrett, III
Secretary of the Navy

Admiral Frank B. Kelso, II
Chief of Naval Operations

General A. M. Gray
Commandant, U.S. Marine Corps





The Way Ahead

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AUTHORS' NOTE: On the day we delivered this article to the publisher, the United States was in its third week of conflict in Southwest Asia. No one foresaw in the euphoric spring of 1990 that such an event could shatter the expectations for a more peaceful and stable world. Much more will occur between delivery and the day this article appears. The world situation changed dramatically, and changed dramatically again, in the months the policy we outline in the following paragraphs was being formulated. The way ahead for the U.S. Navy/Marine Corps must recognize and embrace change while hedging against uncertainty. When the lessons of Desert Shield and Desert Storm are documented, this conclusion will head the list.

Cover: The nuclear-powered aircraft carrier USS *Dwight D. Eisenhower*, which saw action during the recent Middle East War, steams with surface, amphibious, and service forces, and a submarine. (U.S. Navy, PH1 Rodney K. Bean, USN)

Inside Cover: Technology proved its worth in the recent war. Here, a Tomahawk cruise missile launched from the USS *Pittsburgh* (SSN-720) heads for its target in Iraq. (U.S. Navy)

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The Way Ahead

The Honorable H. Lawrence Garrett III
Secretary of the Navy

Admiral Frank B. Kelso II
Chief of Naval Operations

General A. M. Gray
Commandant of the Marine Corps

The course may be straight and true for the *Kennedy* (CV-67) battle group—here, heading through the North Atlantic toward the Mediterranean—but the way ahead for the sea services is rife with change and uncertainty. We must embrace that change, and continue to cover our bets as best we can.

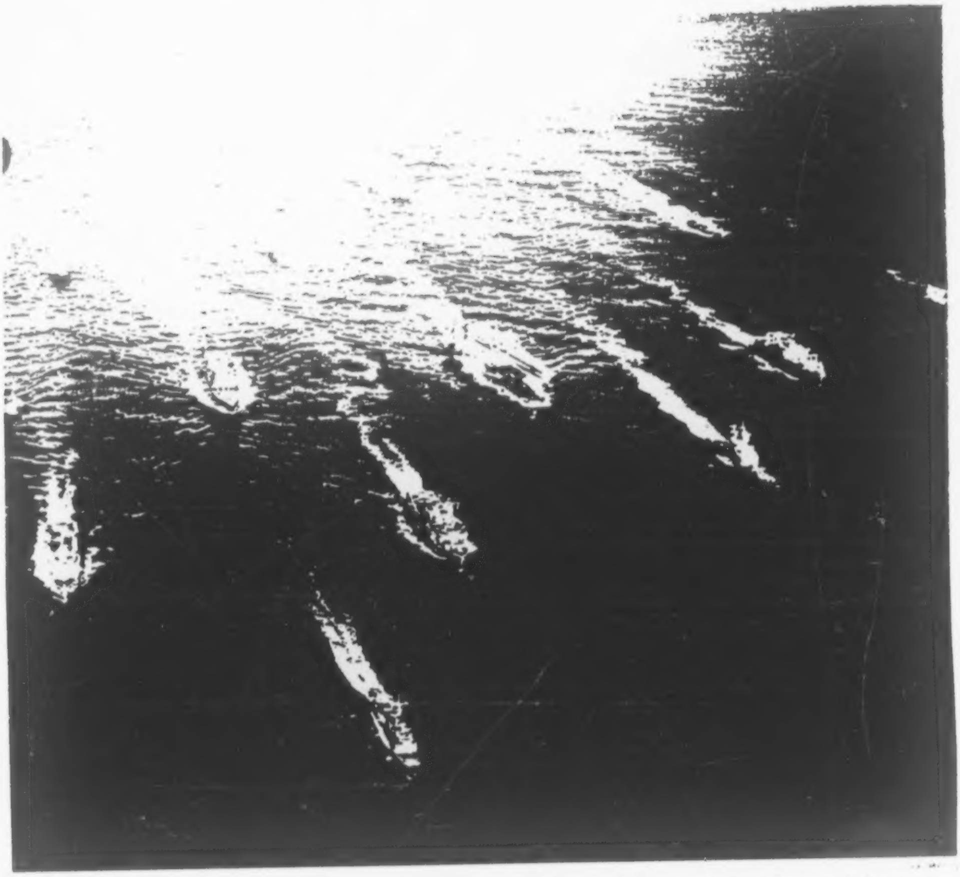
Since the end of World War II, the United States has been the world's preeminent military power—especially at sea, where we enjoy clear maritime superiority. In achieving and maintaining this preeminence, U.S. naval forces have sailed the high seas virtually unchallenged for nearly half a century. Since 1945, most of the world's developed nations have enjoyed peace and stability, often guaranteed by U.S. maritime power.

But now the winds of change are blowing throughout the world—from Washington to New Delhi, from Moscow to Pretoria. Events since the summer of 1989 have brought a fundamental shift in the post-World War II balance of power. No longer do we have the sense of certainty that accompanies a bipolar world power structure and a central, agreed-upon threat.

It is time to challenge many of our ground rules and assumptions. Some will require revision; others must be revalidated. We must reshape naval force structure, strategy, tactics, and operating patterns that are wedded too closely to the concept of an Armageddon at sea with the Soviet Union. At the same time, we will deal increasingly with political and fiscal pressures to reduce the national debt—pressures that unquestionably will affect the level of resources available for defense in the future.

Mastering the post-Cold War challenges will require our full range of skill and knowledge as practitioners of the art of naval warfare. We must respond to new initiatives and be prepared to march in different directions. The old excuse—"Because that's the way we've always done it"—no longer will do. We must work to shape and guide the forces of change in the direction that best serves the needs of our nation. At times, this will be an arduous task, but we have a basic edge over potential adversaries in the quality of our people, whose talent and hard work have given us dominance over the high seas for nearly half a century. We must keep before us one goal: to maintain maritime superiority well into the 21st century—through a Navy and Marine Corps able to meet the challenges of an uncertain future.

Even though we cannot predict with confidence exactly what the new century will be like, we know that our fundamental interests will remain unchanged. The defense of our nation, our people, and our way of life will continue to be our foremost objectives. It also will remain in our interest to contribute to the maintenance of a stable and secure world—a world that will advance the welfare of all peo-



ples, within an environment that fosters economic development and furthers individual freedom and human rights. We live in a world that is more economically interdependent than ever, and we can never afford to retreat into isolationism.

Clearly, international turmoil, aggression, and conflict are not things of the past. Drives for regional hegemony, resurgent nationalism, ethnic and religious rivalries, drug trafficking, and terrorism are certain to challenge international order during the final decade of this century. Within developing nations, dramatic increases in population and growing dissatisfaction with the perpetual gap between rich and poor will continue to be major causes of unrest and insurgency.

As we confront tomorrow's challenges we must remember that there are things only the United States can do. As General Colin Powell, Chairman of the Joint Chiefs of Staff, has noted, the superpower shingle hangs above only one nation's door. For the United States—a maritime nation—to remain a superpower, it needs a Navy and Marine Corps that can maintain maritime power in the world's ocean and littoral areas, where this nation and its citizens have political, economic, and individual interests.

Implications of Change: National Security Policy

How will this far-reaching change affect our national security policies?

- We are likely to face increasing limitations on U.S. access and influence. Absent a Saddam Hussein as a focal point, developing nations, friends, and even allies may be reluctant to subordinate national interests to a broader common purpose.
- Another reality of the new era will be proliferation of advanced military technology and equipment. As major military powers reduce forces and pull back from forward positions, regional powers and emerging Third World nations will accelerate their acquisition of modern combat weapons and delivery platforms. These countries are arming themselves with high explosives, precision-guided munitions, sophisticated air-defense warfare systems, and guided missiles. In addition, regional powers will continue to develop and acquire the technology to pose chemical, biological, and nuclear threats. The widespread proliferation of advanced weapons—plus a demonstrated willingness to use them—will present new challenges to U.S. interests and military forces.

- Finally, this will be a period of uncertainty. Warning signs will become increasingly ambiguous and reaction times will be shortened as the identity and motives of potential adversaries—and the timing and scenarios of threatening events—become more difficult to discern. Instead of simply facing a diminished but still-potent force of Soviet tanks and warships, we increasingly will confront new and diverse challenges to worldwide political and economic stability, from organizations and nations bent on disruption or conquest.

An Evolving Strategy

For almost half a century we focused on the possibility of global war, to be fought primarily on the European continent and in its adjacent waters. To deal with the many changes and cope with the new uncertainties, we must shift the objective of our national security strategy from containing the Soviet Union to maintaining global stability. Our evolving strategy must focus on regional contingencies in trouble spots wherever our national interests are involved.

For U.S. naval forces, this shift—from global commitment against a single threat to global commitment against a number of regional threats—poses a dilemma: What do we do with a maritime strategy formulated during the Cold War, focused primarily on global conflict with the Soviet Union? The answer: We extract the strategy's enduring principles, and apply them to current planning. The maritime strategy itself remains on the shelf, with Atlantic and Pacific operations plans as bookends, ready to be retrieved if a global threat should reemerge.

In an address at Aspen, Colorado, on 2 August 1990, President George Bush stated that U.S. defense policy must adapt to the significant changes in the world, without neglecting the enduring realities of the nation's security. The President outlined a future U.S. defense policy based on four major elements:

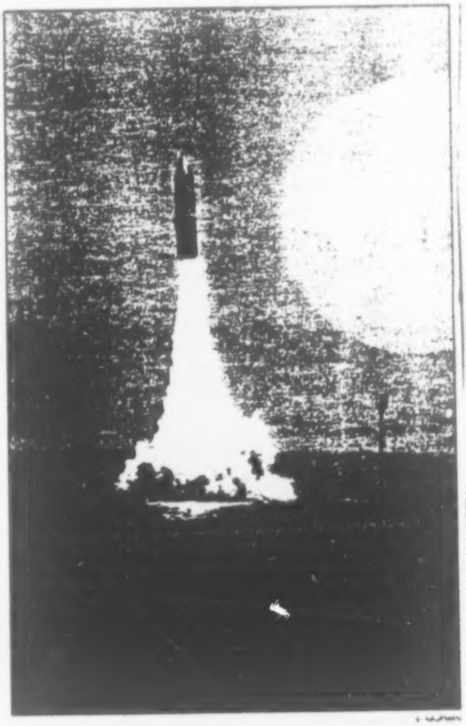
- Deterrence
- Forward Presence
- Crisis Response
- Force Reconstitution

Deterrence, both nuclear and conventional, costs less than any level of conflict, and will remain the cornerstone of U.S. defense policy. Nuclear deterrence will be required as long as any country possesses the nuclear-weapon capability to strike the United States or endanger U.S. forces abroad.

Around much of the globe, the Navy and Marine Corps will be the primary means of preserving U.S. regional influence. In a time of decreasing availability of overseas bases for U.S. land and air forces, the presence of capable naval forces near areas of potential crisis remains a key element of national security. In addition to contributing to deterrence, deployed naval forces strengthen our ties with allies and demonstrate continuing U.S. commitment to maintaining world peace. If deterrence fails, forward-deployed forces guarantee timely responses at points of conflict.

Since most of the world's population lives within 50 miles of the sea, our naval power-projection capabilities will remain particularly useful in applying U.S. military might at appropriate places and times. Naval crisis response means much more than simply maintaining the capability to keep the sea lines of communication open to our allies and sources of critical materiel. We must be able to project credible military forces rapidly to meet threats posed to our interests, in places where no friendly forces-in-being exist.

Having the capability to project sea-based power is essential to the defense of these interests, most of which are found in littoral areas. To maintain stability, we must be able to influence events on land, as well. As noted earlier, the reality of declining force levels and shrinking overseas infrastructure means that our naval expeditionary forces will have to be forward-deployed and self-sustaining as they project power over or across the beach. In some cases, they may pave the way for longer-duration joint or combined operations, in which forward-deployed naval forces are present or arrive first on the scene to enable the sequential introduction of additional forces.



While our new defense strategy is geared primarily to regional threats to U.S. interests, it also must take into account the uncertainty surrounding the ongoing upheaval in the Soviet Union and Central Europe, and the capabilities of the Soviet military that we expect to remain in place during the foreseeable future. A global conflict with the Soviet Union appears to be far less likely than in the recent past, but we must preserve our ability to reconstitute adequate forces, if faced with a resurgent global threat to peace.

Combined and Joint Operations

Collective security remains central to U.S. strategy. In the past, our primary security ties and operations centered on countries with whom we maintained formal alliances. Such alliances remain a strategic necessity for the nation, but their character may differ substantially in the future. The Gulf War's allied coalition may be a harbinger of future security arrangements that will complement long-standing treaties, such as NATO. We must heighten our emphasis on combined operations and training with national forces of many regions—both to facilitate cooperation and coordination with them and to maintain our own expertise in likely operating environments.

Joint power-projection operations will be required to protect worldwide U.S. interests. When each service fulfills its respective role, we can capitalize on synergistic capabilities that stem from decades of organizational focus and institutional ethos.

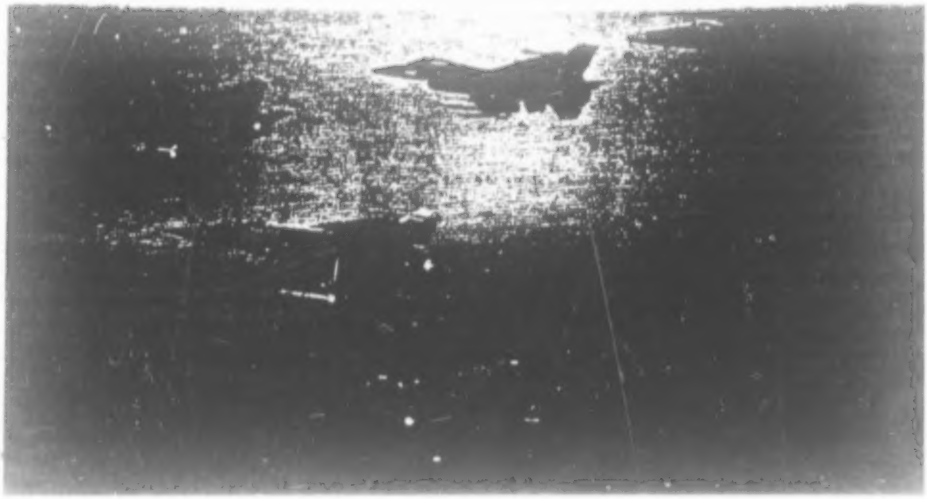
The unique missions and functional capabilities of the services are intended to be complementary, enabling, and enhancing, and they provide us with the means to generate the greatest total combat capability in the shortest time. Operations Desert Shield and Desert Storm will serve as prototypes for future joint operations. During the Desert Shield buildup in Southwest Asia, we demonstrated the enabling role of maritime forces. Forward-deployed naval forces already on scene were augmented within days by two carrier battle groups, a Marine Expeditionary Force, the Air Force's 1st Tactical Fighter Wing, and paratroopers from the Army's 82nd Airborne Division. These forces contributed to the initial defense of Saudi Arabia and covered the subsequent arrival of additional ground and air

Deterrence, both nuclear (left, a Poseidon C-3 missile breaks through Florida waters) and conventional, will continue to depend heavily on forward-deployed naval forces. Regional alliances—here, the *Saipan* (LHA-2), foreground, sails for a NATO exercise with (left to right) Spain's *Principe de Asturias*, the USS *Eisenhower* (CVN-69) and Italy's *Giuseppe Garibaldi*—must remain strong to offset shrinking overseas basing infrastructure.

First on the scene for Operation Desert Shield, naval forces (top, an SH-3 Sea King tracks the liquid natural gas carrier *Hoegh Gandria* through the Gulf) enforced the blockade of Iraq and covered the arrival of the first troops (here, members of the 82nd Airborne Division debark from a C-5A in Saudi Arabia). Gear for the first three Marine Expeditionary Brigades arrived in maritime prepositioning ships within ten days of sailing while a coalition air force (facing page, Qatari, French, Canadian, U.S.—not shown, British and Saudi) flew cover.

units. U.S. Navy warships maintained sea control and enforced United Nations sanctions throughout the buildup period. Naval capabilities, which complemented those of allied air and ground forces, were integrated fully into theater-wide planning before hostilities commenced.

But as ongoing developments in both the Soviet Union and Southwest Asia demonstrate, it is difficult to foresee the course of future events. Replays of Operations Desert Shield and Desert Storm certainly are not the only scenarios we expect to see in the 1990s, so we must maintain prudent hedges against uncertainty. Accordingly, maritime forces will continue to be required to establish and maintain the sea control essential to power projection operations whenever and wherever they are necessary. Battle space will be more complex. Control of the air, sea, and undersea environments, essential to successful military operations on land, will take on a different character but certainly will be as complex as maintaining control in an open-ocean environment. Sensors and communications systems designed for blue-water operations may not work as well in confined areas, shallow seas, or over land. The threats posed by small coastal-patrol boats, shore-launched cruise missiles, and shallow-water mines will present new challenges to our operators. Quick-reaction



tionary forces capable of going anywhere, with full logistic, medical, and repair support; and a sea-based maritime prepositioned force.

By maintaining a credible Trident submarine force, we will have a modern, survivable, and potent sea-based strategic deterrent capability well into the next century. At the same time, our attack submarine force will retain the numbers and capability needed to hold at risk sea-based strategic platforms able to threaten the United States. We cannot discount the major open-ocean warfighting potential of the Soviet submarine force, which has yet to experience any downturn in production rates or technological developments. Threat of its use could reemerge quickly, should the intentions of the Soviet leadership change—so we can never afford to cede our current technological edge in submarines and antisubmarine warfare.

With the Soviet Navy threat reduced, our modern attack submarines and surface combatants can better augment carrier air power, as they did with cruise-missile attacks on Iraq (facing page, the *Mississippi* [CGN-40] launches a Tomahawk from the Red Sea). Amphibious forces will continue to mix old and new (here, the 30-year-old *Raleigh* [LPD-1] receives a CH-53E while operating with Amphibious Group 2 and the 4th Marine Expeditionary Brigade in the Gulf).

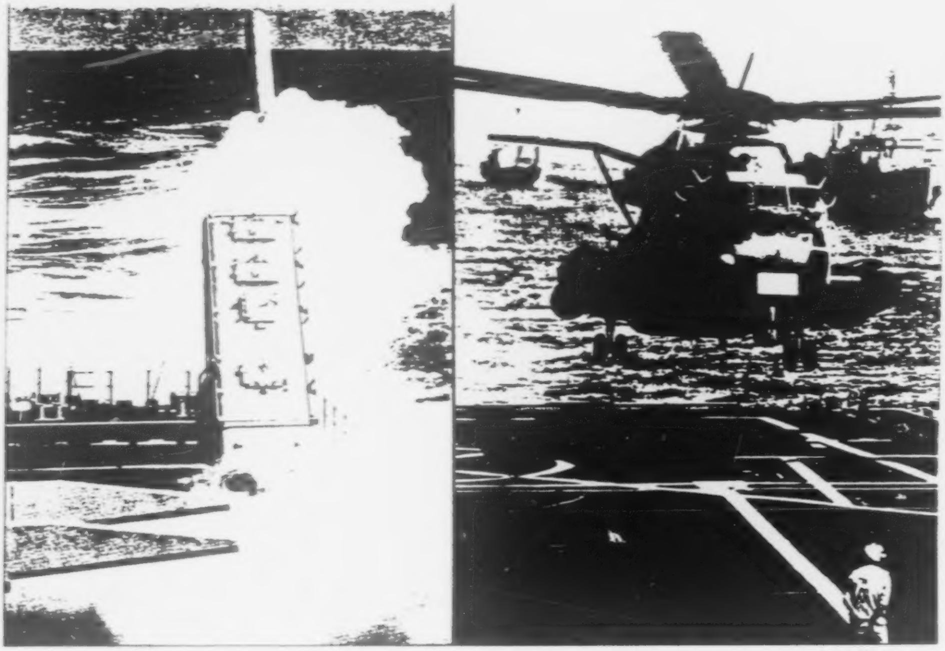
Preserving our edge does not require a massive building program. Continuation of our current attack submarine force through its programmed service life, together with a construction program to maintain our industrial base for building submarines, will allow us to retain a credible attack submarine force into the next century. Freed from a nearly full-time requirement to train for ASW in far-forward areas, this force now can be available for more regional power-projection and support missions.

Our carrier battle groups and amphibious ready groups are the cornerstones of our forward deployed forces, and will remain so. These supremely independent forces can be tailored to include varying numbers and mixes of tactical aircraft, surface combatants, submarines, logistic support ships, and Marine air-ground task forces. They can be tasked on short notice to conduct combat operations—for extended periods—anywhere in the world.

During the 1990s, we expect to adjust the composition of our carrier battle groups and amphibious ready groups routinely, to suit specific situations. Untethered from the earlier predominant concern with the global war-at-sea scenario, we have new flexibility to shape our combat punch to prescribed missions and expected threats. Often, we will be operating with smaller battle groups, particularly as our older surface combatants are replaced by fewer—but more capable—cruisers, amphibious ships, and destroyers. Adding the newest generation of strike aircraft to the air wing, just after the turn of the century, will enhance our capability significantly. But improved capability never will be a substitute for adequate numbers. A single unit still cannot be in two places at one time. We must have enough carriers, amphibious ships, and surface combatants to maintain focused, forward, simultaneous peacetime presence in several regions—along with a surge capability to respond to larger crises.

Complementing carrier air power is the formidable firepower distributed through our modern surface combatants and attack submarines. Major advances in weapons technology have brought longer ranges and greater accuracy in weapons and combat systems small enough to be employed from a variety of platforms, making it possible to disperse a significant amount of firepower. The effective employment of Tomahawk missiles against Iraq from battleships, attack submarines, cruisers, and destroyers is a precursor of the multi-mission utility we must continue to emphasize in the future.

Our need to exploit the tactical advantages and flexibility of distributed firepower with sophisticated, state-of-the-art weapons does not obviate the need for guns and other less-complex weapons. We must continue to distribute all forms of striking firepower among many platforms, to give our war fighters a menu of complex and simple weapon systems of varying capabilities and costs. Longer ranges, complex employment considerations, and a wider variety of available weapons will bring renewed emphasis



on tactics and techniques, fully as important as firepower itself.

Distributed firepower expands our capability to project power landward. But controlling events ashore ultimately means putting warriors over the beach with the capability to do what must be done. The flexibility inherent within the Marine Corps's force structure of three active (and one reserve) divisions, three active (and one reserve) air wings, and three active (and one reserve) force service support groups—formed into Marine Expeditionary Forces (MEFs)—provides warfighting commanders with a wide range of military capabilities. Our existing MEFs provide a reservoir of integrated combined arms power from which Marine air-ground task forces (MAGTFs)—all special-operations capable—can be task organized to execute simultaneously a wide range of missions around the globe.

All MAGTFs are fully prepared to deploy rapidly by a variety of means. Using amphibious shipping, strategic sealift, strategic airlift, or maritime prepositioned ships, these expeditionary forces are light enough to get where needed and heavy enough to win. More importantly, they arrive capable of conducting sustained combat operations. Taking advantage of the synergistic combat capability resulting from the integration of ground combat, air combat, and combat service support elements under a single commander, a variety of MAGTFs can be formed. Each MAGTF, regardless of size, is a self-sustaining, fully combat-capable force able to operate either independently or as a part of a joint task force. Each also possesses the command and control capabilities needed to form a command element for joint and combined operations.

Marine Expeditionary Forces are the Corps's principal organization for combat and peacetime preparedness. Today, drawing upon the forces assigned to the MEFs within the Atlantic and Pacific commands and Selected Marine Corps Reserve forces, two task-organized MEFs have been committed to Operation Desert Storm. Ashore is the I Marine Expeditionary Force, which because of its size and composition is, in essence, a Marine Expeditionary Corps. It is composed of the 1st and 2d Marine Divisions (Reinforced), the 3d Marine Aircraft Wing (Reinforced), and the 1st and 2d Force Service Support Groups, four naval construction battalions, and an Army armored brigade. Additionally, a MEF afloat has been formed by combining two Marine Expeditionary Brigades and one Marine Expeditionary Unit.

Marine Expeditionary Brigades (MEBs) are designed specifically to deploy by a variety of means. They are capable of conducting sustained operations, and they also are the lead elements for larger Marine expeditionary forces. The rapid buildup of combined-arms power demonstrated during Operation Desert Shield resulted from this capability. Two MEBs deployed by strategic airlift and married up with equipment and supplies brought into the theater by two squadrons of maritime prepositioning ships. In addition, two other MEBs deployed to the region on board amphibious shipping. These forces became the lead elements of the MEFs currently serving in Operation Desert Storm.

Marine Expeditionary Units (MEUs) are forward deployed routinely to maintain influence and enhance stability in regions of interest. Afloat in task-organized amphibious ready groups, these MEUs represent our nation's on-scene, immediately responsive amphibious power-projection capability. MEUs routinely deploy with a spe-

Marine Expeditionary Units with special-operations capabilities routinely deploy afloat in presence roles, and are often first on the scene when crises erupt—here, Marines from the 22nd MEU (SOC) provide security for noncombatant evacuation operations, from the roof of the U.S. Embassy, Monrovia, Liberia.

cial-operations capability. The 22nd MEU recently was tasked with providing security for the U.S. Embassy and the evacuation of threatened U.S. and foreign citizens and diplomats in Liberia.

Special-Purpose MAGTFs are configured to accomplish specific missions. These MAGTFs are organized, trained, and equipped to conduct a wide range of conventional and unconventional operations. They can deploy by a variety of means and normally are composed of Marines and sailors who are highly trained in both day and night operations, to include raids and strike operations. Recently, a Special-Purpose MAGTF was formed from amphibious forces in Southwest Asia to respond rapidly to the unexpected crisis in Somalia. Two amphibious ships were detached from the task force operating in the Persian Gulf and raced to the crisis area. Four hundred and sixty miles from the objective, two helicopters loaded with a special-purpose force were launched. They were refueled in-flight by Marine aircraft. This force was able to reach Somalia in time to protect and evacuate threatened American and foreign citizens, before returning to the Persian Gulf to continue with its other mission.

Any consideration of conducting naval operations in shallow waters along the world's littorals raises the specter of mines. In the maritime environment of the 1990s, we will have to be proficient in mine warfare, both offensive and defensive. On the offensive, our P-3 aircraft and Air Force B-52s can carry large quantities of mines over long distances and place them with accuracy. Tactical carrier-based and Marine aircraft also can deliver mines, as part of a coordinated air strike. Our submarines can plant mines in heavily defended areas and then engage ships with torpedoes or cruise missiles, as they try to evade the mine fields.

We have focused most of our mine warfare efforts in the area of countermeasures. Our helicopter and surface mine countermeasures forces are getting better all the time, but we face new challenges as mine technology spreads worldwide. Shallow-water mines, for example—readily available at low cost—are simple weapons easily employed by potential adversaries. In the 1990s, we will continue to explore and develop new technologies, including laser mine detection and the use of remotely piloted underwater vehicles for locating and neutralizing naval mines. Our surface mine-countermeasures force, manned by both active and reserve personnel employing these new technologies, will be a vital part of our balanced naval force.

An equally vital—though until recently less-noticed—contribution to our maritime power is strategic sealift. During the first 60 days of Operation Desert Shield, 85% of all cargo sent into the Persian Gulf theater moved by sea. We have long recognized that strategic sealift would be a critical component of our maritime force structure in the 1990s, and we were ready for the challenge.

Over the past ten years, we have spent more than $7 billion on sealift. Our sealift force numbers 130 ships, including eight fast sealift ships capable of meeting demanding, high-speed schedules, as they carry vital materials for forces airlifted to the scene of action. We expect to add to our inventory over the next few years.

The current shipping pool is sufficient for scenarios with long warning times, but even large numbers of fast-sealift ships would be insufficient for most short-warning scenarios. This is why we have maintained three sets of prepositioned equipment and sustainability on 13 naval ships, with each set capable of equipping and sustaining a Marine Expeditionary Brigade. All of these equipment sets, together with the Marines who use them, are now in Saudi Arabia. This prepositioning program proved its worth despite the short warning time and long distances of Operation Desert Shield. No matter what the mode of transportation, however, sea and air superiority are the keys to our ability to deliver materials when and where needed.

Preserving our leadership base is more important to our ability to maintain maritime superiority than any category of weapon systems or delivery platforms. A professional officer and enlisted leadership core is essential for any combat-ready military force. Rebuilding an educated, trained, and experienced cadre of professional leaders takes a great deal of time, and is far more difficult than rebuilding force structure.

Training and education will be top priorities in the 1990s. In a constrained fiscal environment, a well-trained and educated force will provide the highest payoff for our investment. Professionalism will remain our primary force-multiplier. As the threats we face become more capable and more technologically sophisticated, shrinking both battle space and reaction time, we will not have the luxury of a practice shot; we will have to do things right the first time.

In addition to the appropriate mix of skills and experience levels our personnel force will require in the 1990s, we also will need the right mix of active and reserve forces. As specified in Title 10, U.S. Code, reserve forces exist to buttress active forces in times of war or national emergency, and when other exigencies demand. The value of a ready, trained reserve component is being demonstrated dramatically in Operation Desert Storm. Navy and Marine Corps Reserve personnel have responded superbly, and are integrated into our force structure to enhance not only our capability in Southwest Asia, but also our capability to maintain presence and respond to crises in other regions of the world. We will continue to need the reserves.

Since we now anticipate additional warning time with respect to global threats, we can best use shrinking resources by planning for phased mobilization of those reserves needed to augment regular forces in the event of major East-West conflict. Toward that end, we are transferring roughly 25% of our current inventory of surface combatants, the *Knox* (FF-1052) class frigates, to the reserves. Most of these frigates, primarily designed for the ASW convoy mission, will be placed in reduced availability (ready for full duty in 180 days), with operating time devoted exclusively to Selected Reserve training.

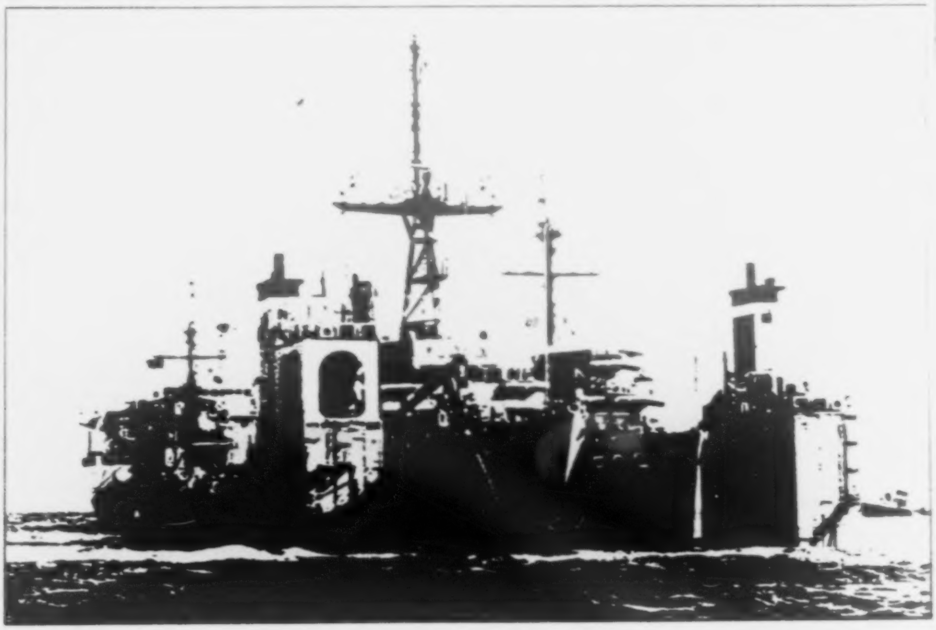
The Navy of the 1990s and Beyond

How big a force do we need?

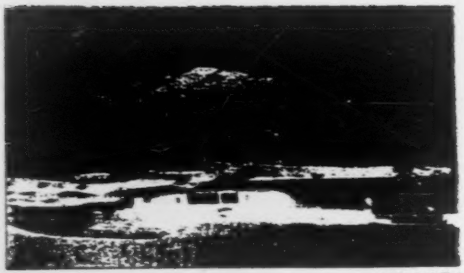
The size of our force will be determined by the following three criteria:

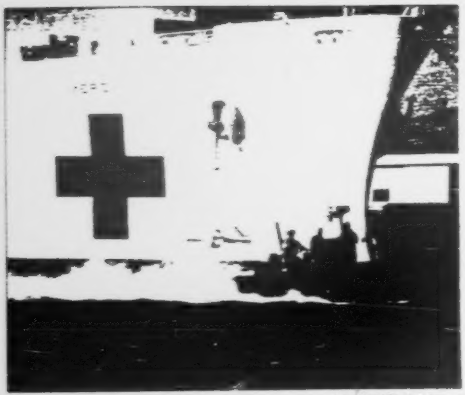
- We need a force capable of supporting the President's national security strategy. We must be able to maintain forward deployments and be able to reinforce in the event of a regional contingency. We also must retain sufficient strategic forces to deter a resurgent global threat.
- We need a force that can sustain the level of readiness and response capability required to implement that strategy. To sustain that level of readiness, our ships, submarines, and aircraft must be well-maintained and combat ready. Sufficient time and resources must be allocated for overhaul and maintenance. We also must afford opportunities for adequate basic and advanced training in a realistic, stressful environment.
- Our people remain the strong foundation upon which our maritime strength is built. We must continue to attract and retain the best of our nation's youth. To do that we must operate our force in a way that provides our sailors and Marines a decent, realistic quality of life—beginning with stable sea and shore rotation patterns. Current guidelines concerning the time sailors and Marines are away from home port must be followed, even while force structure shrinks. We also must provide them adequate time for maintenance and training. Our sailors and Marines must continue to have confidence in their ships, their equipment, and their shipmates.

With these criteria, we can size our balanced total force for the future at about 450 active and reserve ships, plus three active and one reserve Marine division wing teams (Marine expeditionary forces). Plans to achieve necessary reductions are in place. We will get smaller in a rational way. And, we remain committed to building a force that will provide a realistic and affordable margin of security



The USS *Avenger* (MCM-1), lead ship in the newest class of mine-countermeasures ships, reflects the Navy's new focus on surface forces that can both detect and destroy mines. Here, the *Avenger* and the older minesweeper *Adroit* (MSO-509) await offloading in the Persian Gulf from the submerging transport deck of the Dutch heavy-lift ship *Super Servant-3*, during Operation Desert Shield.





While maintaining our technological edge, as seen in this HARM 2G launch from an F/A-18, the Navy and Marine Corps must ensure that their "people" foundation remains strong, augmented in times of strife by reservists—here, on the hospital ship *Mercy* (T-AH-19) in the Persian Gulf, guarded by a Coast Guard harbor-security craft—and bolstered by those who endure the long wait for their return, as these *Guam* (LPH-9) families are now doing.

for our nation.

With a smaller force, we will find it harder and harder to maintain the wide balance of capabilities required to counter sudden, unexpected geopolitical challenges and newly emerging threats or capabilities. There are clearly increased risks associated with a 25% reduction in our naval forces. Given the fiscal realities of the coming decade, a force adequate to meet our quality-of-life goals during routine peacetime operations likely would be unable to support a regional crisis or conflict for more than a few months without major departure from the preferred rotation and deployment policies. High-tempo operations will be even more difficult to sustain. Smaller forces will be less well-balanced will have less surge capability, and will be less able to respond in a timely manner. This will place a premium on early political decisions. We must be careful not to encourage, by untimely absence, anyone who might seek to fill a perceived power vacuum or exploit an apparent weakness in our force structure.

Moving into the 20th century's last decade, the naval forces of the United States have adapted rapidly to the dramatic changes of the past year—and stand poised in anticipation of changes yet to come. The forces that U.S. taxpayers bought over the past decade have served us well; most will still be with us, forming the backbone of the fleet, well into the new century.

As we anticipate the changes and challenges that lie ahead, our efforts will be focused on several key areas:

- *Training and education*, because they are our primary force multipliers
- *Joint and combined operations*, because they generate the greatest combat capability in the shortest time
- *Power projection*, because it is the key to successful implementation of a stability strategy
- *Deployment flexibility*, because we must make adjustments to get the job done with a smaller force
- *Surge capability*, because a premium will be placed on getting adequate combat power rapidly to the scene of action

We also must continue to ensure that, as technology evolves, we employ it to our best advantage, and have the capability to counter developments by others, if required. The technological gap between our systems and those of potential adversaries most likely will narrow, but we must never lose our comparative advantage.

We must match technology to the battle space of the future, keeping in mind that many of our platforms will spend three or more decades in active service. Low observables, improved weapon seekers, remotely piloted vehicles, netted high-speed computers, and multi-dimensional electronic warfare and command, control, and com-

munications systems are some of the promising areas we are exploring actively.

An affordable technological advantage is essential to successful implementation of our national strategy. The fiscal realities of the 1990s have made affordability an evermore important factor in sustaining our maritime strength. To meet this challenge, we have initiated a top-down Total Quality Leadership approach throughout the Navy and Marine Corps. Our goal is to strive for continuous improvements, in order to provide the best affordable mix of forces and capabilities and to maintain those forces in a high state of readiness, able to get the job done right the first time.

New developments—as dramatic and unforeseen as those capturing our attention and imagination over the past year—surely lie ahead. But as ongoing events in the Soviet Union and Southwest Asia demonstrate, the future may not be as different from the past as we once hoped it might be.

In the years ahead our nation's leaders still will find naval forces just as useful, just as necessary, and just as important as they have been so often during the years of the Cold War. In peacetime, crisis, or conflict, naval forces will continue to serve our nation and our national leadership through a wide range of roles and military options, from sensitive representation to massive retaliation. They will continue to provide a stabilizing forward presence, protecting U.S. lives and property, and safeguarding the commerce of our maritime nation. They will continue to demonstrate America's resolve, forestalling or punishing hostile acts, and, if required, engaging in combat.

With a reduced, but still-capable force, we will sail into a future whose only certainty is its unpredictability. The future may be bright; it will undoubtedly be dangerous at times. We must be prepared for whatever it brings.

Naval forces have a staying power and mix of capabilities unique to our nation's armed forces. Independent of political access or foreign bases, they have the capability to act swiftly and decisively anywhere in the world—through unilateral action, joint U.S. forces operations, or as part of a coalition of allies.

Future large-scale regional deployments, like Operations Desert Shield and Desert Storm, necessarily will be joint-service efforts. Naval forces, complementing and enhancing the capabilities of the other services, will serve as enabling and participatory elements, making possible rapid and effective concentration of the country's power in support of our national interests and security policies—anywhere.

The task before us—one which needs to be kept in clear focus more than at any time in the last four decades—is to avoid relearning the lessons of the past as we adjust to the geopolitical and fiscal realities of the present and prepare for the future. This future, regardless of its uncertainty, will still require the United States to have a Navy and Marine Corps of sufficient size, quality, and capability to ensure freedom of the seas and the application of naval power, to maintain peace and stability wherever our national interests lie.

STRATEGY OF FORWARD DEPLOYMENT

Senator **Nunn**. Admiral Kelso, you say on page 8 of your testimony that Operation Desert Storm "validates our strategy of forward deployment." I would certainly agree with that. As you point out in your statement, the forward deployment in the theater consisted of a cruiser, a destroyer, five frigates, and an amphibious support ship. That was quickly augmented by aircraft carriers and a battleship. My question is what do we mean when we say "forward deployment." Obviously, forward deployment, while important, may not require continuous steaming of aircraft carriers. In looking over the next 5 years, do you believe that forward deployment of carrier battlegroups is essential or could forward deployment be provided by less expensive ships that could be augmented quickly, as was the case in Operation Desert Storm?

Admiral **Kelso**. Peacetime forward presence of U.S. naval forces is the main element of conventional deterrence. It should be remembered that the aircraft carriers that were able to so quickly reinforce the ships in the Gulf were themselves forward deployed. Similiarly, the ships that augmented from CONUS were themselves working up for scheduled deployment. These preparations for forward presence were key to their ability to respond quickly. "Forward presence" is a change from the Cold War's "forward defense" in Europe, but there is little change from a historic U.S. naval perspective. It is consistent with the receding threat and reduced force levels driven by fiscal constraints. Forward presence is critical to deter aggression and preserve regional stability. Forward presence protects U.S. interests and provides the most visible evidence of our commitment to employ our military capability. With forward deployed forces, we can respond to crises and control escalation beyond the initial outbreak of violence. With forward presence the Nation's leadership has the capability to affect the crisis as it occurs. Absence from the scene generally means having to reverse actions already accomplished which is politically more difficult and often requires greater forces being deployed.

The centerpiece of our balanced power projection forces remains the carrier battle group, which is our most powerful and versatile deployment asset. Each battle group is composed of an aircraft carrier, surface combatants, and possibly one or more nuclear attack submarines. These forces are supported by combat logistics ships, land-based maritime patrol aircraft, and sophisticated space-based surveillance and communications systems. They can be ready on short notice to conduct full combat operations anywhere in the world. We will need a force of at least 12 carriers and about 150 surface combatants to meet future requirements for forward presence and to provide additional surge capability in a crisis. During the next several years, we will reduce our forces to these levels. In the future, meeting presence requirements with fewer assets will call for full exploitation of the mobility and flexibility of our naval forces. That will mean changing the length and location of deployments, as well as tailoring the composition of carrier battle groups, amphibious forces, and surface action groups to specific circumstances. It is conceivable that, in some scenarios, groups of ships other than aircraft carriers may be adequate to maintain presence and conduct some naval missions, but this makeup changes with an assessment of differing levels of risk.

As General Galvin said in recent testimony, "Maritime forces will assume an ever increasing role as we reduce our land based forces under a CFE agreement. The need for modern, multi-role, naval units will not diminish. Surface combatants are critical to providing carrier battle group flexibility and power projection capability. The ability to introduce U.S. power at a time and place of our choosing requires us to maintain a robust amphibious warfare capability, sized to carry all levels of amphibious forces."

TERMINATION OF PEACEKEEPER MISSILE PRODUCTION

Senator **Nunn**. General McPeak, the fiscal year 1992 budget contains no funds for production of Peacekeeper missiles, thereby terminating this program. With the reduced buy now planned, Peacekeeper test assets will be exhausted by 2003 and system reliability and accuracy could not be guaranteed after that date. In short, the Air Force decision appears to lock us into a deadline for retiring the Peacekeeper sometime shortly after 2003. Since the Minuteman ICBM have ended up being in the inventory for over 25 years, why is the Air Force planning only a 15-year life expectancy for the Peacekeeper?

General **McPeak**. The is a design life and not necessarily an operational life. The Minuteman III weapon system had a 10-year design life, yet through modifications and upgrades its operational life has in fact been extended past the 25-year point. The decision to reduce the Peacekeeper procurement to 114 missiles, with production ending in fiscal year 1991, is based on two factors. First, fiscal realities do not allow the Air Force to test seven missiles per year and accordingly CINCSAC lowered the annual test rate to three per year. This adjustment was acceptable because of the accuracy of our engineering estimates and the tremendous success of the development/initial test and evaluation program. Second, based on the lowered test rate, we decided to stop production at 114 missiles, thus allowing testing to the year 2003. After 2003, we will continue with ground testing as well as aging and surveillance testing, along with engineering estimates in order to derive reliability data.

Senator **Nunn**. General McPeak, realistically, do you expect the Midgetman ICBM to be in production by that date?

General **McPeak**. We are continuing Small ICBM development with the intent to preserve the option to pursue a 1997 first asset delivered/initial operational capability. The final decision on when to begin procurement remains open at this time.

Senator **Nunn**. General McPeak, what will we do if we face a situation in 2003 where: (1) all Minutemen have been retired; (2) continued reliability and accuracy of the MX cannot be assured; and (3) the Midgetman has been canceled or is still not ready for production?

General **McPeak**. We do not anticipate being in this situation. We currently have no plans to retire the Minuteman III. Concerning Peacekeeper, we would like to be able to buy more test assets, but we just can't afford it. We will have to "make do" with the test assets we have left, coupled with intensive on-site and laboratory tests. Finally, as you know, we are pursuing the research and development program for the Small ICBM. We are simply deferring a production decision.

Senator **Nunn**. General McPeak, are we in effect setting in motion now a chain of events which will lead us inevitably to a dyad 12 years from now?

General **McPeak**. No. We have no retirement plans for Minuteman III or Peacekeeper, so we will have those assets available. In addition, by that time, we anticipate there will have been a production/deployment decision on the Small ICBM.

PEACEKEEPER AND START

Senator **Nunn**. General McPeak, has the United States agreed in the START talks that the Rail Garrison Peacekeeper will be considered a mobile ICBM, even though we no longer plan to deploy the missile on rails? If so, why?

General **McPeak**. The United States agreed in the START talks that the Peacekeeper Rail Garrison system would be considered a mobile ICBM for reciprocity with the Soviet Union. Since the United States does not have a true mobile ICBM and the Soviets do, there had to be some accommodation in the negotiations to win some of the verification provisions the United States required for Soviet mobile ICBMs. Since U.S. ICBM planning included a near-term deployment of Peacekeeper in the Rail Garrison basing mode, it was the likely candidate for reciprocity. Reciprocity includes continuous monitoring of solid rocket motor production facilities and numerically limiting non-deployed Peacekeeper assets as part of a mobile ICBM verification regime.

Since then, we have dropped plans to rebase the 50 silo-based Peacekeepers in a mobile (Rail Garrison) mode. This is a fiscally prudent step, notwithstanding the continuing Soviet move to greater mobile basing of their ICBM force—so long as the strategic modernization programs identified in the fiscal year 1992 President's budget are fully supported.

Senator **Nunn**. General McPeak, if we go on record saying that the Peacekeeper is mobile even though we plan to keep it in silos, what will happen if START II produces an agreement banning mobile ICBMs or mobile MIRVed ICBMs?

General **McPeak**. The administration has gone on record that the Peacekeeper would be treated as a mobile ICBM for all purposes under START for reciprocity with the Soviet Union. This was based largely on the necessity to reach an accommodation in the negotiations to win some of the verification provisions the United States required for Soviet mobile ICBMs even though the United States doesn't possess a true mobile ICBM.

It is extremely difficult to speculate on potential START II agreements when we have not resolved all the details in the current START negotiations. However, a number of negotiating strategies could be postulated in which the silo-based status of the Peacekeeper system is protected, either by specific language, grandfathering, etc. The actual strategy employed will depend on what is in the best interest of the United States at the time START II is negotiated.

Senator **Nunn**. General McPeak, will we be able to take back our designation or will we be stuck with destroying these silo-based missiles?

General **McPeak**. We haven't placed the silo-based Peacekeeper system at risk of elimination should mobile ICBMs or mobile MIRVed missiles be subsequently banned in START II negotiations. A number of possible negotiating strategies could be advanced in START II to ensure that our substantial investment in silo-based Peacekeeper is protected, while only the mobile-based infrastructure would be eliminated.

Senator **Nunn**. General McPeak, the Air Force is proposing to conduct an operational test launch of a Peacekeeper missile from a rail car late next year but then conduct no additional mobile launches thereafter, correct?

General **McPeak**. You are correct. The current funding level removes Rail Garrison from Full Scale Development (FSD). We will be able to complete design of the train, perform limited mobility testing, and conduct one test flight from the train early in fiscal year 1993. This program will capture enough design detail to allow resumption of FSD, if necessary. This leaves the option to proceed with Peacekeeper Rail Garrison if arms control negotiations do not go well.

Senator **Nunn**. General McPeak, if we are no longer planning to deploy the MX in the rail-basing mode, why are we spending money in a constrained budget to conduct this one test launch?

General **McPeak**. The continuation of research and development of the Peacekeeper Rail Garrison program is a prudent and necessary hedge against (1) possible future threats to the other two legs of the Triad, (2) instability of the strategic balance as the United States negotiates reductions in its strategic forces, and (3) the continuing robust Soviet strategic nuclear modernization program. The Soviet Union has, to date, deployed over 300 mobile ICBMs and continues development and deployment of at least five new ballistic missiles.

Senator **Nunn**. General McPeak, is one test launch statistically significant?

General **McPeak**. No, but the program will capture enough design detail to allow resumption of the full-scale development, if warranted.

Senator **Nunn**. General McPeak, will this one mobile test launch make it harder for us in a future START II situation to rescind our designation of the Peacekeeper as a mobile ICBM?

General **McPeak**. Peacekeeper was initially designated a mobile ICBM for reciprocity with the Soviet Union. The United States needed it to successfully negotiate some of the verification provisions the United States required for the Soviet mobile ICBMs, even though the United States doesn't yet possess a true mobile ICBM.

With this test launch, we'll truly characterize Peacekeeper as a mobile system. However, a number of negotiating strategies could be postulated in which silo-based Peacekeeper is protected, either by specific language, grandfathering, etc. The actual strategy eventually chosen will depend on what's in the best interest of the United States at the time START II is negotiated.

FEWER, SMALLER HEADQUARTERS

Senator **Nunn**. General McPeak, after your nomination, I wrote to you and asked you to identify the most serious problems in the management and operations of the Department of the Air Force. You responded, in part, that the Air Force "needs to emphasize fewer, smaller headquarters." What goals have been established in this regard?

General **McPeak**. Our goal is to streamline, reorganize, and consolidate wherever possible. We will: (1) accomplish a commonsense realignment consistent with the line operational mission; (2) clarify Headquarters USAF functional assignments and identify the "legitimate" Air Staff and Secretariat; and (3) define the role of separate operating agencies and direct reporting units and their relationship to HQ USAF. In addition, we will look beyond the management headquarters to the rest of the "tail." Secretary Rice and I have taken several steps to achieve these goals.

Senator **Nunn**. General McPeak, what steps have been taken to reduce the size and number of headquarters?

General **McPeak**. Secretary Rice and I have instituted several headquarters management initiatives. We have begun a 5-year program to reduce the Headquarters USAF staff, similar to an effort already undertaken at the major command (MAJCOM) headquarters. These actions will result in a 20-percent reduction in the Headquarters USAF staff—saving over 700 staff and 12 general officer positions. We are also reorienting our active Numbered Air Force (NAF) missions to a strictly operational and warfighting perspective and phasing out 15 of 19 Air Divisions, eliminating an entire management layer. These efforts will save over 5,400 positions. We have eliminated the Reserve NAFs and transferred their responsibilities to HQ AFRES—saving over 350 positions. Finally, we have reviewed Individual Mobilization Augmentee requirements, based on our wartime requirements and budget constraints. The net result was a reduction of over 2,200 positions (17 percent).

However, our efforts are not restricted only to headquarters organizations. I also directed a review of our wing-level structure and implemented a program to consolidate operational wings at multi-wing bases, thereby reducing wing headquarters overhead personnel. Our efforts will also include a revised wing structure that consolidates certain aircraft maintenance elements within flying squadrons to allow different weapons systems to be consolidated in a single wing structure.

We must also ensure these initiatives continue. I have personally instructed all MAJCOM commanders to establish procedures to continually assess their staff requirements to ensure they perform only headquarters functions.

FIRE SUPPORT

Senator NUNN. General Gray, with the planned retirement of the last two battleships, the Marine Corps will lose a large portion of naval gunfire support capability. With the Army's apparent success in employing the Multiple Launch Rocket System (MLRS) and the Army Tactical Missile System (ATACMS), are you considering adapting either of these systems to your use, either for support from ships or as part of the expeditionary force itself?

General GRAY. Currently, the battleships provide the only major caliber guns in the Active fleet to support amphibious operations. Amphibious operations by their nature place a high demand on constantly available all weather fire support. As we enter an era in which there is an extraordinary potential for the use of battleships we have today, we realize that because of defense budget reductions the battleships may be mothballed once again. With the retirement of the two remaining battleships, it will be necessary to identify funding for a naval surface fire support (NSFS) research and development and procurement program. Although the Marine Corps defers comment to the Navy on the actual naval surface fire support system to replace the battleships, the minimum warfighting requirement for NSFS is for a system that will support up to two Marine Expeditionary Forces in a regional conflict.

The Marine Corps is interested in a General Support Rocket System as a replacement for our General Support Artillery. This requirement was identified prior to the decision to retire the battleships and we are looking at modifying MLRS technology to operate with Marine Expeditionary Forces and Brigades in the amphibious environment.

NON-ACTIVATION OF 335TH SIGNAL COMMAND

Senator NUNN. General Vuono, why wasn't the 335th Signal Command activated during Operation Desert Shield and Operation Desert Storm?

General VUONO. The force identified for deployment to Southwest Asia (SWA) was designed to provide the theater commander the minimum essential force to accomplish his mission. In the initial stages of the operation, U.S. Army Central Command (ARCENT) determined that the theater signal mission could be executed by a single signal brigade; a theater Army size signal command was not required. The 11th Signal Brigade from Fort Kuachuca was selected for the mission and began its deployment on September 3, 1991. When the President authorized an expanded theater force to provide more military options, the Army formed the 6th Signal Command to execute the theater Army signal command and control mission. This unit structured at bare minimum manning (approximately 86 Active component personnel), in keeping with CINCCENTs policy of maintaining an austere force and the 6th Signal commander was dual-hatted as the ARCENT G–6.

335TH ARMY SIGNAL COMMAND

Senator NUNN. General Vuono, does the Army have any plans to change the current organization or mission of the 335th Signal Command?

General VUONO. The Army has no plans to change the mission of the 335th Signal Command. We are developing a new table of organization and equipment which will modernize the organizational structure of all signal commands. Our ongoing Total Army Analysis confirms the importance of the 335th in the total force.

MINE WARFARE

Senator NUNN. General Gray, a recent Washington Post article said that the Marine Corps advance through the Iraqi mine barriers was greatly facilitated by Iraqi ineptitude in repairing the mine fields and in carelessly marking lanes through them. What programs do you have to improve our ability for ground forces to breach minefields and other barriers?

General **Gray**. The Marine Corps Countermine Program includes the following projects in the RDT&E (Navy) budget for fiscal years 1992-93:

— Advanced Technology programs in minefield detection include Standoff Mine Detection Ground (SMDG) and the Navy/Marine Corps Mine Detection Laser Technology (MDLT) program. SMDG will provide a mine detection capability on a ground based platform in advance of forces. MDLT will provide an airborne detection capability in very shallow water, the surf zone, and beach areas.

— Advanced Technology programs in mine neutralization include the Distributed Explosive Mine Neutralization System (DEMNS), the next generation explosive countermeasure, and the Wide Area Mine Clearance (WAMC) program, an initiative to counter the future off route area mine threat.

— Three programs will be in Full Scale Engineering Development (FSED) during fiscal years 1992-93. The Anti-Personnel Obstacle Breaching System (APOBS) replaces the World War II vintage Bangalore Torpedo with a two man portable linear charge effective against wire obstacles and anti-personnel mines. The Assault Amphibian Vehicle (AAV) Track Width Mine Plow (TWMP) will provide our amphibious assault forces with a mechanical minefield proofing capability at the high water mark and when tanks with TWMP are not employed. And the Magnetic Countermine Systems (MACS) program will continue development of the field expedient magnetic coil systems procured for use during Desert Storm.

In addition to the RDT&E (Navy) funded items listed above, two Foreign Comparative Test (FCT) programs funded by DOD will be pursued. First, the British Pathfinder cleared lane marking system will be tested for compatibility with the Marine Corps Assault Amphibian Vehicle (AAVP7A1), the Light Armored Vehicle (LAV), and the M60A1 and M1A1 tanks. Second, the Israeli Anti-Magnetic Mine Activating Device (AMMAD) procured for use with the tank-mounted TWMP during Desert Storm will be evaluated for use on the AAV TWMP and other applications.

Currently, the Marine Corps has no programs in the fiscal years 1992-93 budget specifically designed for breaching barriers other than minefields and wire.

Questions Submitted by senator Alan Dixon

INDUSTRIAL BASE

Senator **Dixon**. General McPeak, I understand the F-15 production has ended and F-16 production will be terminated in fiscal year 1993. With the Advanced Tactical Fighter (ATF) not coming on line until the 21st century, what are the prospects for a strong fighter prime contractor and subcontractor industrial base?

General **McPeak**. I believe there will be adequate opportunities for several prime contractors to continue in the design and manufacture of future fighter aircraft. In the Air Force, we now have two teams bidding to enter full scale development on our highest priority fighter program, the Advanced Tactical Fighter (ATF). ATF production will continue well beyond the turn of the century: Each of those teams have at least two prime contractors involved. The Navy will soon reveal its requirements for an A-6 replacement aircraft, the AX; that will also be a major design and procurement effort for many years to come. The Air Force will need to look at replacing our interdiction fleet beginning around the 2005 time frame, and we also must look for a multirole fighter follow-on to the F-16. These programs will, I believe, guarantee continued competition and work for fighter manufacturers.

We periodically conduct assessments of our subcontractor industrial base. We originally scheduled a fighter aircraft review to be completed in March 1991. However, because of anticipated difficulty of getting access to key fighter industry contractors during the ATF source selection process, we shifted our resources to the bomber/airlift sector. The industrial base assessment for the fighter sector is now scheduled to be completed in December 1991. At that time we will have information on the impact of the F-15 and F-16 terminations and the time lag before start-up of the ATF on the fighter subcontractor industrial base.

Senator **Dixon**. General McPeak, will there only be one company to make fighters in the future?

General **McPeak**. No, I believe there will be adequate opportunities for several prime contractors to continue in the future design and manufacture of fighter aircraft. In the Air Force, we now have two teams bidding to enter Full Scale Development (FSD) on our highest priority fighter program, the Advanced Tactical Fighter (ATF). ATF production will continue well beyond the turn of the century. Each of those teams have at least two prime contractors involved. The Navy will soon reveal its requirements for an A-6 replacement aircraft, the AX, that will also be a major design and procurement effort for many years to come. The Air Force will need to look at replacing our interdiction fleet beginning around the 2005 time frame, and we also must look for a multirole fighter follow-on to the F-16. These programs will, I believe, guarantee continued competition and work for fighter manufacturers.

STRATEGIC SEALIFT AND AIRLIFT

Senator DIXON. Admiral Kelso and General McPeak, I understand that in Operation Desert Shield approximately 50 percent of our sealift came from foreign ships—an asset which may not be available next time—and that a significant amount of additional equipment, 12 fighter squadrons and two light infantry brigades, could have been lifted in the early days of the deployment if the C-17 had been available. What significant changes to our strategic sealift and airlift should be proposed?

Admiral KELSO. Senator, 50 percent of sealift did come from foreign sources, but this is in number of ships only. Foreign shipping, however, lifted only about 20 percent of the weight requirement, while U.S. flag assets, government and privately owned, lifted the remaining 80 percent. The ongoing Mobility Requirements Study (MRS) will define the new strategic mobility requirement and the combination of prepositioning, sealift, and airlift needed to meet it.

General MCPEAK. Airlift provides rapid global mobility to our joint forces. A large portion of todays airlift capacity rests in our C-141 fleet. Unfortunately, these aircraft are approaching the end of their useful service life. So, we will replace the most fatigued C-141s one-for-one with C-17s, and continue flying other C-141s that have useful service life remaining. This gradually increases our capacity from 48 to about 54 million-ton miles per day. Besides increasing our quantitative capacity, the C-17 offers qualitative advantages: direct delivery, increased airfield availability, and greater throughput. In the first 12 days of the Desert Shield deployment, the C-17's capability would have allowed us to deliver the equivalent of 3 additional F-15, F-16, F-4, and A-10 squadrons (12 total), plus 2 light infantry brigades. The C-17 will help ensure rapid global mobility well into the 21st century.

STAND-OFF WEAPONS

Senator DIXON. Admiral Kelso, in light of the recent A-12 decision and the lessons learned from Operation Desert Storm, the need for stand-off precision weaponry due to the loss of stealth benefits seems apparent. What emphasis is being placed on continuing procurement of stand-off weapons such as the Navy's SLAM?

Admiral KELSO. SLAM was developed as an interim fill weapon while awaiting the development of a classified system. SLAM production is scheduled for termination after fiscal year 1991. Additionally, the Department is developing the less sophisticated, but highly capable, Advanced Interdiction Weapon System (AIWS). AIWS will be comprised of a family of low-cost weapons capable of launch from ranges of [deleted] nautical miles and altitudes from [deleted] AGL to [deleted] MSL. The baseline AIWS will consist of a low-cost air vehicle with GPS/IMU guidance and a submunition payload. The pre-planned product improvement (P3I) variant will consist of an upgraded baseline weapon incorporating a unitary warhead, a precision terminal seeker, and a data link for man-in-the-loop control. It is anticipated that the AIWS P3I weapon will be available to the fleet at the turn of the century.

REVIEW OF TERMINATED WEAPON SYSTEMS

Senator DIXON. General Vuono and General McPeak, will Operation Desert Storm have any impact on the earlier decision to terminate production of several key weapon systems, such as the F-15E or the Apache AH-64?

General VUONO. Everything is subject to review, but I do not see us reversing Apache's procurement objective of 807. 807 Apaches are what we need.

General MCPEAK. While the F-15E performed well during Operation Desert Storm, under current budgetary constraints we could not simultaneously maintain historical fighter production rates and modernize to meet the future threat. Desert Storm confirmed the necessity of air superiority for any successful military operation and we must field the Advanced Tactical Fighter to ensure we can maintain air superiority in the future. Given the emerging world order and fiscal realities, we accepted quantitative reductions to our force structure and increases in fighter fleet average age in order to maintain momentum on essential technological improvements.

COMMAND AND CONTROL CAPABILITY

Senator DIXON. General McPeak, in a widely cited article published in the Airpower Journal last fall, you stated that the Air Force's command and control network was not up to the task of managing a large tactical air war because it lacked "reliable, secure, inter-operable, high-speed communications, and ADP (automatic data processing) between the central tasking authority and each tasked base." As I recall, you felt this capability was marginal in the Pacific area and "shows no sign of achieving satisfactory status in the near term." In light of the experience of the U.S. Central Command in coordinating a massive air campaign using not only the air assets of all U.S. military services, but also those of many allies, do you still believe that the current command and control capability is marginal? If so, what steps would you recommend to remedy this situation?

General MCPEAK. Our systems and procedures for command, control, and communications (C^3) played a major role in a resoundingly successful air campaign. However, a large part of the effectiveness was due to the luxury of 5 month's worth of work-arounds and training to minimize inherent shortcomings. Additionally, the quick establishment of air superiority allowed us to work in a permissive environment. Some of the reasons our C^3 was effective follow:

— The computer system used to help generate and transmit the Air Tasking Order (ATO) was the Computer-Assisted Force Management System (CAFMS). The CAFMS assigned to the 9th Air Force, whose responsibility it is to conduct the air war in the Southwest Asia theater, was not designed to handle the number of airbases or the size of the ATO used in Desert Storm. The system was enhanced in a series of steps done from August 1990, right up to the start of the air campaign in January 1991. We added existing CAFMS processors, including our training/testing model, bought new processors and storage devices, and linked them all together with software changes engineered in the desert to create a system that would support a very large air campaign. Once expanded and software upgraded, CAFMS provided, for the first time ever, the ATO to Army, Navy, Air Force, Marine, and allied forces on a real-time basis. Additionally, it permitted the single air operations planner to task, retask, and assess missions as soon as crews returned to base.

— The primary communications network used to transmit the ATO was single-threaded and relatively frail. However, we were able to operate in a benign electronic countermeasure environment, free from jamming or destruction of our communications links. Had contingency or backup transmission methods been required for many bases, the daily planning cycle could have been extended by the 12 to 18 hours required to transmit an enormous ATO.

— The early establishment of air superiority during Desert Storm allowed us to face a relatively static enemy, hunkered down and awaiting our moves. This permissive battlefield allowed us to prosecute the campaign with little deviation from "the script." As I discussed in the Airpower Journal article, the primary shortcoming of our existing command and control systems is that they force us into a 3-day planning cycle. A changing battlefield situation can cause the plan to lose relevance before it is even transmitted to an executing unit. There is a direct correlation between the enemy's degree of freedom to act and the amount of command and control (C^2) information that must be passed.

— The C^2 system we developed supported simplified C^2 relationships put together for Desert Storm. That is, although the Air Component Commander directed the air assets of all U.S. services and allied countries, he did so with a purely U.S. Air Force system. Technical and political interoperability problems that vex the development of C^3 systems in established theaters like the Pacific and Europe were overcome by necessity in Southwest Asia.

The solution we are pursuing is to reduce our dependence on a large, detailed ATO produced by a central theater planning cell. By developing composite wings that include, at one base, under one commander, all the resources needed to form composite force packages, the need for detailed guidance from above is reduced. The composite wing commander can be given general, mission-type orders with the planning details to be determined at his level. The amount of information flowing in both directions between headquarters and wings will be greatly reduced. The Contingency Tactical Air Control Automated Planning System (CTAPS) is being developed to help further reduce the planning cycle. CTAPS will incorporate automated planning aids that can be tailored for various echelons of planning and command.

QUESTIONS SUBMITTED BY SENATOR JOHN GLENN

LESSONS LEARNED—OPERATION DESERT STORM

Senator **GLENN**. General Vuono, Admiral Kelso, General McPeak, and General Gray, there has been much criticism over the years since the end of the Vietnam war that the responsibility for failure to win that war did not rest with the commanders in the field but the leaders here in Washington. While in Saudi Arabia, we had the opportunity to hear General Schwarzkopf's field perspective on why Operation Desert Storm was so successful. Each of you participated in the Vietnam war in one assignment or another. Now each of you has participated in the execution of a very successful war from a leadership position here in Washington. Will you tell the committee what the differences are between the execution of the Persian Gulf war from a Washington perspective, and what lessons should we learn from Operation Desert Shield and Operation Desert Storm for consideration in future crises?

General **VUONO**. I believe there are three lessons to be learned. First, in the Vietnam war operational decisions were often made in Washington; in Operation Desert Storm operational decisions were made where they should be made, in the theater. Second, Goldwater-Nichols is working. The law gives the unified commander command of all of the forces from all the services in his theater. You saw the synergistic effect of General Schwarzkopf's brilliant orchestration of the capabilities of the Army, Navy, Air Force, and Marine Corps. Third, there was clear political guidance to the Defense Department. We knew what the national military objectives were. These provided the direction we needed to design both a strategy and campaign plan to achieve them.

Admiral **KELSO**. From a Washington perspective, the differences between the Persian Gulf and Vietnam conflicts are many and varied.

First and foremost, the administration clearly identified our objectives in the Gulf war. The President enumerated our objectives, and they were neither changed nor compromised. In the Vietnam conflict, the stated political aims were difficult to measure. This led to military objectives that were both ambiguous and changing.

Second, the administration's tireless efforts secured international cooperation and support. This support was embodied in 12 United Nations resolutions endorsing coalition efforts to remove Iraq from Kuwait. This support also led to military cooperation between the United States and many nations. In contrast, the United States did not enjoy nearly as much international support during the Vietnam conflict. However, as much as international cooperation and support eased efforts in the Gulf war, our efforts would have been no less legitimate in its absence.

More importantly, we had support for our efforts here at home. After debate and expression of honest differences of opinion, Congress closed ranks and demonstrated the strength of the American system. The American people as well recognized that our cause was just. Again, these are benefits that we did not enjoy during the Vietnam war.

Another notable difference between the Vietnam and Persian Gulf wars is these conflicts were fought by two dissimilar U.S. military forces. Today's military is not only all volunteer, but it is also better trained than that of the Vietnam era. We now have a military that consists largely of career professionals who choose the service as a way of life. Above all, today's services more fully understand the value and importance of joint operations in the combined arms environment.

Many have taken note that today's military enjoys a much better relationship today with the American press than it did during the Vietnam era. I believe that this improved relationship is due in part to the fact that the military and the media better understand each other's crucial role in American society. This new understanding allows for a degree of cooperation not experienced during the Vietnam war.

A final difference between the Vietnam and Persian Gulf conflicts can be seen in the conduct of these wars by the National Command Authority. It has been noted in recent weeks that during the Vietnam conflict, the National Command Authority participated in nearly all aspects of campaign planning and execution, even to the level of individual target selection. In contrast, President Bush and Secretary Cheney allowed General Schwarzkopf and his staff to develop plans, recommend forces, and select targets. The administration approved plans after careful consideration but did not interfere in day-to-day operations. In short, micromanagement was kept to a minimum. Another key decision by the Bush administration was to "go big" in the early stages of the build-up. The President kept true to his policy of not committing U.S. forces half-way. Our intention was clear from the start: if we fight, we fight to win.

To provide a truly meaningful comparative analysis of the Vietnam and Persian Gulf wars, I feel obliged to speak of both differences and similarities. The differences may provide some degree of comfort, for our success in the Persian Gulf war can be partly attributed to them. The similarities, however, should give us pause and caution because we cannot be completely sure of their relative importance in future conflicts.

In both the Vietnam and Persian Gulf wars, U.S. forces conducted large portions of their campaign from well-developed land bases. The large infrastructure ashore masked the value of mobile, self-sustaining naval forces. Our next conflict may call for forced insertion of an amphibious force supported by a carrier air wing.

A second similarity is evident in that, in both conflicts, the United States was afforded the opportunity for a gradual build-up of force. We did not have to mass forces overnight to take on Saddam.

In both conflicts, we faced a relatively benign air and naval environment. Neither adversary possessed a submarine or significant anti-ship threat. Again, we cannot count on such an environment in future wars.

We will continue to study both the Vietnam and Persian Gulf wars in both comparative and individual analyses. Each will yield individual lessons that must be taken at face value, without the overriding assumptions that any particular lessons can be credited with the overall success or failure of a campaign.

General **McPeak**. There was a profound difference between the execution of the Persian Gulf war and the Vietnam war from Washington's perspective.

The difference was NOT that Washington "stayed out of the military's business" and "refrained from interfering with the war." We should neither desire nor expect Washington to "stay out" of a war. To the contrary, Washington must always be involved. The famous Prussian military philosopher Karl von Clausewitz recognized nearly 200 years ago that warfare is nothing more than politics conducted by other means. Warfare is the most violent kind of political confrontation. Washington must be involved to determine objectives, set policy, and provide guidance at all times.

The real difference between the execution of the Persian Gulf war and the Vietnam war was the level of Washington's involvement. Washington was involved at the macro level in this war; they determined objectives, set policy, and provided guidance, but they did not "dive into the weeds." In the Vietnam war, the President himself often selected bombing targets, weapons load, and even aircraft tactics; in the Persian Gulf war, the President wisely allowed the military experts to do those things they were trained to do.

I believe we—the entire government learned these vital lessons from the Vietnam war and applied them well in the Persian Gulf.

General **Gray**. There have been many analogies drawn between the war in Vietnam and our recent operations in Southwest Asia. Our success in Operation Desert Storm can be attributed to several factors. First, we made the system work. The NCA gave the military a mission, and in much the same way as any commander would, General Schwarzkopf began planning ways to accomplish that mission. The military objectives that were finally accepted were based on military necessity and political reality. The point to be made is that there was a great deal of give and take between the military and civilian leadership on what we wanted to accomplish, with the military having the lead on how to accomplish the mission. General Schwarzkopf was very sensitive from the start about protecting our forces, and this remained a high priority throughout the campaign.

The changes that were implemented in the 1980s within the Department of Defense have improved the communication between the military and civilian leadership. This improved communication and refined command relationships had a significant impact on the success of Operation Desert Storm. The lesson of Vietnam that seems most important is that before we commit forces we should have clearly defined and attainable strategic objectives. Operation Desert Storm demonstrated that our formidable capabilities, when applied properly within the context of clearly defined strategic objectives, are second to none.

A danger we face at the end of any successful campaign is that we draw too many conclusions from a very brief and successful war. For example, there were 10 world class ports in the region that allowed us to put over 500,000 troops on the ground with the necessary support to conduct a major campaign. There are few other regions in the world that can boast similar capabilities. The enemy we faced after a month of continuous bombing was not as formidable as we expected. The terrain in the region was more supportive of our style of warfare than either a jungle or mountainous region.

The lessons that are most significant are: that the quality of our people made the difference; the cumulative effect of a sea, air, and land power is formidable; our equipment is second to none; our smart munitions work; and that the most likely conflicts in the future may occur in regions that will have neither the infrastructure nor the support of so many nations.

GOLDWATER-NICHOLS

Senator **Glenn**. General Vuono, Admiral Kelso, General McPeak, and General Gray, during the course of an earlier committee hearing on the Persian Gulf, at least one witness expressed concern that, as a result of the Goldwater-Nichols reorganization bill, individual members of the Joint Chiefs of Staff did not have adequate access to the President. As I recall, before that hearing ended, Senator Warner contacted the White House and subsequently reported to the committee that all the Chiefs were scheduled to meet with the President at Camp David the following weekend. Adequate access of the Chiefs, especially during crisis periods, was a matter of serious concern to this committee during mark-up of the Goldwater-Nichols bill. I would be interested in hearing from each of you regarding the adequacy of access to Chairman Powell, Secretary Cheney, and the President as required by the Goldwater-Nichols bill. Specifically, if there were any differences in opinion between you and the Chairman regarding policy or strategy in the Persian Gulf, were those differences raised to Secretary Cheney and the President?

General **Vuono**. General Powell met regularly with the JCS during this crisis and all issues were thoroughly discussed. As you know these discussions are privileged, but I can assure you that I was fully aware at all times that if necessary I could take my views to the Secretary of Defense and the President.

Admiral **Kelso**. Throughout my tenure as Chief of Naval Operations and particularly during Operations Desert Shield and Desert Storm, there has always been appropriate access to the President, the Secretary of Defense, and the Chairman of the Joint Chiefs of Staff as provided in the Goldwater-Nichols Act.

In the beginning stages of Operation Desert Shield—August 15, 1990, to be exact—the other JCS members and I met with Secretary Cheney and the President during which time there was a full exchange of views. Subsequently, the Joint Chiefs consulted with the Secretary and the President at Camp David on December 1, 1990. Again, we had the opportunity for frank discussion and free interchange.

The JCS have also met with Secretary Cheney on several other occasions during the Persian Gulf crisis.

As prescribed in the Goldwater-Nichols Act, I have, as a JCS member, the prerogative to submit to the President, the National Security Council, or the Secretary of Defense, advice or opinions that differ with the Chairman's counsel in his role as primary military advisor to the National Command Authority. At no time during the Persian Gulf crisis did I feel the need to exercise this option.

The system put in place by Goldwater-Nichols by which sound military advice is provided to our National Command Authority works well and served our Nation well during Operations Desert Shield and Desert Storm.

General **McPeak**. Yes, there were ample opportunities to discuss options and differences of opinions.

General **Gray**. I have adequate access to the President and the Secretary, and can make known to them my views, both in support of and in disagreement with the Chairman, as appropriate.

GUARD AND RESERVE MANPOWER

Senator **Glenn**. General Vuono, Admiral Kelso, General McPeak, and General Gray, by all accounts, the Reserve and National Guard personnel played a key role in the delivery of equipment and personnel to the Persian Gulf. The activation of these personnel has obviously placed a strain on them and their families. Do you see any problems on the future recruiting and retention of Reservists and National Guardsmen—many of whom do not have mandatory service obligations? What plans do you have for dealing with this matter?

General **Vuono**. The full impact of Operation Desert Shield/Storm on the Army's Reserve component recruiting and retention programs is difficult to assess and is not known at this time. We do not anticipate any appreciable problems.

Recruiting for the first 6 months of fiscal year 1991 shows the Army National Guard (ARNG) is 33 percent below the desired level while the Army Reserve (USAR) is 21 percent below their mission. Several factors contributed to this decline. First, from October through December, recruiting was suspended for units that were activated to support Operation Desert Shield/Storm. Second, the Army Stop Loss actions prohibited recruitment of separating Active component soldiers into ARNG and USAR units. (With the upcoming surge on soldier releases from active duty, we expect to yield a high number of transition assignments into our Reserve component units.) Finally, there appears to be some reluctance on the part of potential recruits to enlist. In view of this circumstance, we are closely examining our incentive packages to respond to changing market conditions.

Retention results for the first half of the year for both the ARNG and USAR are encouraging. The reenlistment rates are above fiscal year 1990 levels. These higher rates are expected to continue throughout fiscal year 1991.

Finally, to help us assess the impact of Operation Desert Shield/Storm on Reserve component recruiting and retention, the Army recently began several research initiatives. Research will focus on mobilization preparedness, spouse and family support systems, employer support, and propensity to reenlist. The Army Surgeon General has also appointed a task force to review medical recruiting and retention issues and to recommend actions to meet the medical manning challenges.

Admiral **KELSO**. Although it is too early to determine the full impact of Operation Desert Shield/Storm on recruiting and retention, our initial indications are that we will not see a large number of our reservists leaving the Reserve force. Although we will have some reservists who choose to separate, many of those who were called to active duty feel a sense of pride and accomplishment for having served during this operation. Our recruiters did experience some increased resistance to join during Operation Desert Shield, however, due to the patriotism and support the American people expressed for our military during Operation Desert Storm, we anticipate this reluctance will subside.

Our plans include both retention of our Desert Shield reservists and recruiting prior service personnel. Our retention effort is being implemented through our Reserve Transition and Recognition (RESTAR) program.

In this program, each Desert Shield reservist is personally contacted at least twice after returning home. These contacts are to let the reservist know that the Naval Reserve is available to assist in the transition back into the civilian and reserve communities, and to help resolve any problems that the reservist may encounter. This program also includes special recognition for the recalled reservists and the families who supported them during their recall to active duty.

In recruiting, we are currently reevaluating our Reserve recruiting goals. Adjustments in both quantity and ratings requirements are being reviewed. Additionally, we plan to focus our recruiting efforts on the veteran market. We want to fill our Reserve force with those prior service members who have recently separated.

With these two elements, we feel we will be able maintain a quality, fully manned Reserve force.

General **MCPEAK**. Operation Desert Storm has had an impact on Air National Guard recruiting and retention. In comparing August 1989–January 1990 to August 1990–January 1991 data, lower accessions and higher losses were shown. We believe this drop is a result of the Gulf crisis. However, other factors also contribute to the changed recruiting picture. Stop Loss within the Active Air Force impacted our normal level of prior service accessions. We also experienced a pause in recruiting; however, the outlook since mid-February has been encouraging. Initial projections were that our losses would increase tremendously after Operation Desert Storm. The swift and highly successful conclusion of the conflict has reversed our projection, and feedback from Air National Guard retention personnel is that losses will be very close to normal levels.

The real impact of the conflict on Air Force Reserve recruiting and retention is unknown at present and will be for the next 3–4 months. However, we anticipate our largest exodus and shortages in the medical skills area.

Several steps are being taken to assure accession of new members and retention of current members. The Air National Guard has reinstated its policy allowing units to fill critical skills up to 110 percent. A letter was also sent to all Adjutants General stressing the need to increase accessions and to continue to discourage separations. We continue to monitor the recruiting and retention statistics very closely, using a monthly survey, to help detect and remedy any significant trends in those areas. The Air National Guard is increasing its advertising effort, expanding direct mail and national public service announcements, ensuring maximum exposure of the positive aspects in associating with the National Guard. We are also considering expanding the bonus program, applying the maximum opportunities allowed by law. In addition to the above mentioned items, personnel policy is being adjusted as needed, allowing flexibility for returning personnel. For those areas of the country that identify particular recruiting difficulties, additional temporary recruiter positions will be provided. These steps, along with the Nation's increased sense of patriotism, should ensure the Air National Guard meets its end-strength now and in the future.

For the Air Force Reserve, numerous initiatives are currently being worked to stem the exodus of medical personnel. Two new physician/nurse advertisements will enhance medical speciality awareness in the national print media. A new February 1991 paid 30-second television commercial focusing on critical surgical skills is scheduled to run 80 times this year on "Lifetime," a physician oriented national program. In addition, we are focusing direct-mail efforts on eligible (by age and specialty) target groups in general surgery, orthopedic surgery, and nurse anesthesia. Also, a joint AFRES-Air Reserve Personnel Center (ARPC) Process Action Team has undertaken a complete review of the medical officer accession process with a view of cutting total processing time in half.

For other critical skill areas in the Air Force Reserve, unit recruiters continue to work with unit Consolidated Base Personnel Offices to identify shortages so advertising can be initiated or changed appropriately. Several initiatives are being worked between AFRES and ARPC to ensure returning troops from Desert Storm that are eligible for unit or Individual Mobilization Augmentee (IMA) assignments can be gained as expeditiously as possible. One initiative includes recruiting members separating from active duty, demobilized inactive reservists wishing Category A/B assignments, and IMAs desiring to be unit assigned. Another is to identify and solve any pitfalls in the demobilization process that could affect or delay Reserve assignments.

General **Gray**. The Marine Corps also recognizes and appreciates the sacrifice that all marines, and their families, made during Desert Storm. Although it is too early to predict with certainty the impact that the war will have on the future of Reserve recruiting and retention, indications are that the Marine Corps will not have problems in either category. The responsiveness and enthusiasm of our recalled reservists indicate that they were eager to be part of the Total Force Marine Corps which participated in Desert Storm despite the obvious hardships and inconveniences.

To avoid future Reserve recruiting and retention problems, the Marine Corps has taken several actions. First, the Marine Corps Total Force concept ensures that Reserve marines are prepared for recall. The Marine Corps trains its Reserves in the same way that the Active forces are trained. Part of that training emphasizes readiness to go to war at any time. Marines in the Selected Marine Corps Reserve (SMCR) belong to units in which cohesion, team work, and mutual support are everyday factors. It is easier to go to war if you know you can count on your unit and if you have made plans for the welfare of your family in your absence. The units of the SMCR are part of the Total Force Marine Corps and as such are treated the same as our Active forces. This policy builds confidence and a positive outlook for all marines. Confidence and positive feelings about their Corps and their units keep marines in the SMCR.

Second, the Marine Corps is placing a great deal of emphasis on ensuring that the demobilization process is conducted effectively and professionally so that the personal, medical, and financial needs of Reserve marines are properly addressed before they return to their homes. The goal is to ensure that the experience of being recalled to serve their Nation is as positive and minimally disruptive as possible.

Finally, because limited observation indicates that recruiting will not be a future problem, the Marine Corps has not made any major policy changes with respect to recruiting. However, the monthly recruiting situation is being closely monitored and firm conclusions regarding our future Reserve recruiting and retention actions can be drawn in the fourth quarter of fiscal year 1991.

CALL-UP OF ROUND-OUT BRIGADES

Senator **Glenn**. General Vuono, I believe that a preliminary lesson learned from the Persian Gulf conflict is that the Reserve round-out concept did not work as well as the Army had planned. There appeared to be considerable hesitancy in exercising the call-up of round-out units and Active duty units were initially substituted to be deployed in their place. Why weren't the round-out units activated early on?

General **Vuono**. Early on, the focus of the Army was to get into Southwest Asia quickly with trained, ready forces. There was a distinct likelihood of continued Iraqi aggression and the possibility of soldiers having to go into combat upon arrival. This situation required an immediate response. For these reasons, the Army selected Active forces which had a high degree of readiness, were immediately available, and did not require additional time to conduct post-mobilization training. Another factor was the time constraints placed on units activated under Title 10 USC 673b. All of our planning scenarios used prior to Operation Desert Storm called for partial mobilization (IAW 10 USC 673) to follow a Presidential call-up by a few days—10 USC 673b was not seen as a stand-alone authority. The time required to mobilize, train, and deploy these heavy combat brigades (and redeploy them in time to meet legal deactivation requirements) made initial use of the round-out brigades inadvisable. Congress recognized this and granted the Army a one-time exception to the 180-day limitation of the 10 USC 673b authority. This decision not to use the round-out brigades early on did not reflect any lack of confidence in these units, but rather the best response to the unique situation confronting the Army.

ROUND-OUT BRIGADE TRAINING

Senator GLENN. General Vuono, didn't you know that these units could not be deployed without extensive training and therefore needed to be activated early on?

General VUONO. The Army called up the round-out brigades in late November and early December, as soon as authorized by the Secretary of Defense. We have always planned on post-mobilization training for round-out units, however, we did not have the authority to call up combat units until congressional action allowed these units to serve on active duty for up to 360 days under the 10 USC 673b authority. By that time, it was obvious that immediate hostilities were no longer a threat. Therefore, the Army made the conscious and deliberate decision to ensure that they were fully trained and to incorporate them into a reinforcement package to be available to deploy to Southwest Asia if needed. Each unit had a specific training program that was tailored to improve its readiness. These programs included a rotation through the National Training Center where the brigades could conduct collective training. National Guard leaders were involved in these decisions.

RESERVE COMPONENT REDUCTION

Senator GLENN. General Vuono, the budget proposes a reduction in Selected Reserve strength of 270,000 (23 percent) over the next 5 years, the bulk of this reduction is in the Army. What is the basis for this reduction?

General VUONO. The basis for the planned reduction in Selective Reserve strength is the same as that for the reduction of Active component strength—our comprehensive plan to shape a smaller, capable Total Force for the future.

As I noted in my prepared statement, we began to develop this vision for the future Army in 1988 to provide the framework within which the Army could efficiently adapt to change in the international security and domestic fiscal environments while minimizing risk. We based this plan on careful assessments of the future capabilities the Army would require to fulfill our strategic roles in support of national military strategy given the threats the Nation was likely to face through the end of the decade.

The end of the Cold War, and with it the reduced requirement to maintain forces designed to counter the Soviet Union in Europe and elsewhere in the world, permitted the Army to reduce the Total Force by 6 divisions. Hence, the essence of our plan was to significantly reduce the size of the Total Force and to limit our near-term modernization to maintain the quality and readiness of the force. As such, we have structured a carefully crafted program, consistent with the requirements of national military strategy, that substantially reduces both the Active and Reserve components to provide the Nation the land force capabilities it will need in the turbulent decade ahead.

REDUCED ROLE FOR NATIONAL GUARD

Senator GLENN. General Vuono, do you plan a reduced role for the National Guard and Reserve components?

General VUONO. No, the Army will continue to rely extensively on both Reserve components for combat support and combat service support augmentation and to provide reinforcing combat forces. In the future, the timely activation of RC units for crises beyond small-scale contingencies will be essential to the successful attainment of U.S. objectives.

TOTAL FORCE POLICY REPORT ASSUMPTIONS

Senator GLENN. General Vuono, the Total Force Study Report we received early this year indicates the following assumptions with regard to the future of the National Guard and Reserve forces:

Contingencies of less than 30 days. No Reserve forces would be activated. The Active component would be relied on solely to respond. Individual National Guard or Reserve volunteers with needed skills would be accepted as augmentees.

Contingencies of less than 60 days. No Reserve combat forces would be used. National Guard and Reserve combat support and combat service support forces would be used as needed to augment or back-fill Active components.

Contingencies of over 60 days. National Guard and Reserve forces would be used. Included in these forces would be round-out combat units for later deploying Active forces, as well as forces needed to maintain a rotation base.

General purpose forces would continue to be retained in the National Guard and Reserve force structure—some would be maintained at lower readiness levels that would require at least 1 year to reach satisfactory combat readiness.

Wouldn't these assumptions practically strip the National Guard and Reserve components of their existing early deploying combat role and relegate the entire National Guard and Reserve to a reinforcing, reconstituting back-up role?

General **VUONO**. The Total Force Policy has always had two principal tenets: (1) reliance on Reserve forces as the primary augmentation for the Active force; and (2) the integrated use of all available forces. In our assessments of the emerging requirements of the national military strategy, it became clear that the unpredictability and uncertainty of the future international environment will require units that are prepared for immediate deployment without delays for additional training. Hence, rapid initial deployment capabilities must be provided by primarily Active component units. The Active Army will therefore be structured to conduct short duration contingency operations without substantial Reserve component augmentation. Reserve component units will continue to provide required individual and unit combat, combat support, and combat service support augmentation and combat reinforcing capability. Because of the substantially reduced size of the Active component, in the future the Army will rely extensively on the timely mobilization of Reserve forces for major and prolonged contingencies.

PERSONNEL STRENGTH LEVELS IN THE BUDGET

Senator **GLENN**. General Vuono, Admiral Kelso, General McPeak, and General Gray, with regard to the strength levels in the budget, Lt. Gen. Donald Jones, the Deputy Assistant Secretary of Defense for Military Manpower and Personnel Policy, is quoted as saying, "at a minimum, we will ask for a delay in the 1991 force cuts. But the issue may be larger than that. We have to re-think the whole idea of having a smaller force. If the Middle East crisis had happened 5 years from now and we had gone ahead with the drawdown, we would not have the manpower to pull it off." Do you expect to submit an amended budget that would significantly alter the reductions you propose in the budget we just received?

General **VUONO**. The Army will not significantly alter the reductions submitted in the President's budget. The increase in the Active component end-strength in support of Operation Desert Storm primarily consisted of temporary personnel gains from delayed retirements and separations. It also consisted of postponed involuntary losses previously scheduled for fiscal year 1991. The postponed involuntary losses will increase our fiscal year 1991 end-strength to 710,000 soldiers. However, at the end of fiscal year 1992, the Army will achieve the President's budget end-strength objective (660,000).

Admiral **KELSO**. Navy does not intend to submit an amended budget to modify our end-strength reduction plan. Rather, we have adjusted our manpower plans and fully expect to end fiscal year 1991 as close to the previously budgeted end-strength as possible. The delay in return of *Midway, Wisconsin,* and *Missouri* from Desert Storm may require additional personnel which were not planned. We will accomplish this through redistribution of manpower in remaining ships and stations where post Desert Storm operations permit.

General **MCPEAK**. No. The force structure reduction proposed in the fiscal years 1992–1993 President's budget is a direct result of global changes, especially those occurring in Europe. Since Congress has agreed to address Desert Shield/Desert Storm funding in a supplemental budget, the Air Force does not intend to submit an amended fiscal years 1992–1993 budget for military personnel.

General **GRAY**. The Marine Corps does not expect to submit an amended budget which will alter the proposals contained in the President's budget for fiscal years 1992 and 1993. The Marine Corps will seek fiscal year 1992 supplemental funding for unexpected requirements incurred during Desert Shield/Storm.

EFFECT OF OPERATION DESERT STORM ON FISCAL YEARS 1992–1993 STRENGTH LEVELS

Senator **GLENN**. General Vuono, Admiral Kelso, General McPeak, and General Gray, the Fiscal Years 1992–1993 Defense Authorization request proposes active duty end-strength levels in fiscal year 1992 that are about 163,000 lower than current active duty strength levels. For example: the Army would have to reduce by 82,000 from the current level; the Navy would have to reduce by 24,900 from the current level; the Marine Corps would have to reduce by 12,200 from the current level; and the Air Force would have to reduce by 44,400 from the current level. How realistic are the fiscal year 1992 end-strength levels?

General **Vuono**. The Army is committed to a reduction in its end-strength. Our fiscal year 1992 end-strength target of 660,000 soldiers is achievable and includes involuntary losses and reduced accessions.

Admiral **Kelso**. The fiscal year 1992 end-strength levels in the President's budget request represent a balanced manpower plan that matches force structure requirements and maintains the high level of readiness of the existing force. The Navy's manpower reduction strategy will bring Navy end-strength to the fiscal year 1992 level in a balanced fashion without the need to involuntarily separate non-retirement eligible personnel.

General **McPeak**. The Air Force fiscal year 1992 end-strength levels are realistic and achievable. However, the officer strength contained in the President's budget cannot be accomplished without involuntary loss actions.

General **Gray**. The Marine Corps is requesting active duty end-strengths of 188,000 and 182,200 for fiscal years 1992 and 1993 respectively. These strengths are realistic in the sense that they are achievable without excessive or capricious manpower actions. However, these end-strengths do reflect reductions which again cut into the muscle of the Marine Corps—its operating forces. Since our lean supporting and training establishments cannot sustain significant cuts, reductions necessary to reach 182,200 in fiscal year 1993 must come disproportionately from our infantry, artillery, armor, and combat support forces—forces which have already felt the effects of reduction actions in fiscal years 1989 through 1991.

The Nation expects to have a versatile, responsive, combined arms capable Marine Corps which will be balanced, self-sustaining, and able to respond rapidly to conflicts anywhere in the world. To meet those national expectations at 182,200 will be very difficult. Below that strength, we will not be able to do all that is expected. Continued reductions below the 182,200 level will erode our balanced Marine Air Ground Task Force (MAGTF) concept and degrade our ability to rapidly respond and sustain ourselves. We will not be able to effectively maintain our three division/three air wing structure and we will lose capability to provide the Nation with a force-in-readiness in a world of uncertainty.

Senator **Glenn**. General Vuono, Admiral Kelso, General McPeak, and General Gray, will military personnel have to be involuntarily separated to achieve these reductions?

General **Vuono**. In order to reach a fiscal year 1992 end-strength of 660,000 soldiers, we reduce accessions and involuntarily separate military personnel through Selective Early Retirement (SERB), Reduction in Force (RIF), and tightened Reenlistment Control Points (RCP).

Admiral **Kelso**. The manpower levels for fiscal years 1992–1993 as presented in the President's budget request can be reached without involuntary separation of non-retirement eligible personnel. We will continue selective Early Retirement Boards for retirement eligible captains and commanders in accordance with DOPMA and the Fiscal Year 1991 Authorization Act.

General **McPeak**. The programmed Air Force end-strength in fiscal year 1992 of 486,800 is realistic and achievable, but not without involuntary losses. With the end of Desert Storm, we expect stop-lossed individuals will have left the Air Force no later than the second quarter of fiscal year 1992. This, combined with both the voluntary and involuntary program, contained in the fiscal year 1992–1993 President's budget, will allow us to drawdown the Air Force to the programmed levels.

General **Gray**. The Marine Corps plans to reduce its strength in fiscal years 1992 and 1993 to meet the authorized levels without heavy reliance on involuntary separation actions for which separation pay will be required. Marine Corps reduction actions will include some involuntary separations, but, with the exception of the selective early retirement (SER), the majority of those involuntary separations will be the result of normal force management actions. In fiscal years 1992 and 1993 involuntary separations will be required for approximately 100 colonels and lieutenant colonels selected for early retirement, will occur in the cases of lieutenants and captains twice passed-over for promotion, officers who have been retained on active duty longer than 6 years who have not been selected for augmentation, and enlisted marines who will be denied the opportunity to reenlist after reaching their high-year tenure points. Involuntary separations are planned for 315 officers and 1,448 enlisted in fiscal year 1992 and 315 officers and 1,042 enlisted in fiscal year 1993.

ASSIGNMENT RESTRICTIONS

Senator **Glenn**. General Vuono, Admiral Kelso, General McPeak, and General Gray, we are currently in conference with the House on the Operation Desert Storm supplemental authorization bill. One provision that we are attempting to resolve is a House provision that would preclude female personnel with a child under 6 months of age from being called to active duty if in the Reserves or assigned to a duty location or circumstance that would require the child to live in a different location if on active duty. I have a letter, signed by the General Counsel of the Department of Defense, that indicates that the Department of Defense supports the House provision. As you know, Senator McCain and I took the lead in fighting off a similar type of restriction on the floor of the Senate recently in support of the position taken by Secretary Cheney and General Powell, so this letter stating support for the House provision is a surprise to me to say the least. Could you please state your position on the House provision and the effect that it would have on your service if enacted?

General **Vuono**. I believe that the Department of Defense will develop policy or guidelines for all of the services on this issue and we will work with them in that development. As for the effect of the stated House provision, the impact upon unit readiness is that female soldiers who occupy critical positions in our units must be replaced in deployments which occur during their periods of pregnancy. The proposed legislation would extend the post-partum non-deployability period an additional 4½ months. This would increase the total non-deployability time for a pregnant soldier by almost 50 (9 months pregnancy, 1½ months post-partum and now 4½ months additional post-partum nondeployability). This will negatively impact unit deployability and readiness.

Admiral **Kelso**. The Navy does not support policy that places restriction on the assignment of its service members unnecessarily. However, the Navy does support policies on assignment of personnel in the best interest of the service and the individual. An example of this is Navy's current policy governing the management of pregnant service women. The Navy defers assignment of women to shipboard assignment and to deploying units from the 20th week of pregnancy up to a period of 4 months following delivery. Additionally, the Navy restricts the assignment of pregnant women from mandatory unaccompanied overseas duty stations, geographical locations that require the use of government quarters, and areas that have inadequate OB/GYN facilities. Pregnant service women stationed at an overseas duty station without available housing (government or community) or adequate OB/GYN care are reassigned prior to their 20th week.

Reserve personnel follow these same provisions while on active duty. Therefore the Navy supports the recall of female reservists to active duty upon completion of their convalescent period (normally 42 days) following childbirth. They would then be assigned using the guidelines cited above.

General **McPeak**. We have a policy which defers a female member, for a period of 6 months from the birth of a child, from reassignment to an overseas location where the accompanied-by-dependents tour is not authorized. We also defer the female member from deployment for a period of 6 weeks from the birth of a child. We can support a policy which defers a female member from activation/deployment for a period of 6 months after the birth of a child. We would prefer it be left to the discretion of the Air Force but would interpose no objection if it was enacted as law.

General **Gray**. The Marine Corps requires immediate world-wide deployability of all its marines. The Marine Corps does not agree with the House provision to limit recall of reservists or deployment of Active marines for the first 6 months postpartum. The Marine Corps is stretched to the limit to provide pregnant Marines light-duty before delivery and 6 weeks of no duty after delivery of their babies. (Only medical complications would extend this non-deployability.) Any more time away from duty would require that the marine be discharged and replaced with someone who is deployable. If enacted, this provision will increase the number of non-deployable marines.

NAVAL AVIATION

Senator **Glenn**. Admiral Kelso and General Gray, a review of the fiscal years 1992–1993 budget request for Navy and Marine Corps aircraft indicates that there are potential serious deficiencies in both services. Aircraft programs terminated in fiscal year 1992 include the A-12, F-14, F-14D, P-7, AV-8B, and V-22. In fiscal year 1993, the Navy is only procuring 26 new fixed-wing combat aircraft. Does the Navy and Marine Corps have a plan to meet future air warfare requirements, and if so, what is it?

Admiral **Kelso**. The Navy and Marine Corps do and have had a long-range plan to meet future air warfare requirements. In view of the setbacks due to aircraft programs terminated, the plan has required revision. Addressing specific areas, I'll start with carrier airwings. Modernization of medium attack with a replacement for the aging A-6 is our most critical need. Development of the AX to maintain long-range, all-weather strike capability on our carriers is in progress. As the AX is not expected in the fleet until after the turn of the century, we have to take interim measures to maintain our medium attack capability. These measures include re-winging and updating the present A-6 inventory to maintain combat effectiveness. However, due to aircraft retirement forced by age of the overall A-6 inventory, we will experience inventory shortfalls. To fill these shortfalls until the AX comes on line, we will be increasing procurement of the F/A-18C/D and initiating development of the F/A-18E/F. We believe that this plan will keep our carrier decks full while modernizing to meet future threats and is the most effective option available considering funding constraints.

Turning to maritime patrol aircraft, at future planned force levels of 18 Active and 9 Reserve P-3 squadrons, we project inventory shortages starting in the 1997 timeframe. The P-3 line will reopen for Republic of Korea procurement. We are investigating the possibility of an updated P-3 follow-on to take advantage of the opportunity afforded by reopening of the P-3 line.

Investigation of a replacement for the AV-8B has been ongoing but technology has not yet matured such that a replacement aircraft is on the short-term horizon. We are investigating a service life extension program for AV-8Bs.

Replacement of the rapidly aging H-46 inventory with a medium lift replacement is one of our more pressing near-term problems. In addition to Marine lift capability, the H-46 is also the mainstay of USN battle group vertical replenishment capability. The V-22 is a promising aircraft but presents an affordability problem, and so is not contained in the President's budget. DON is pushing hard on a medium lift replacement (MLR) program.

Funding for DON aircraft procurement is one of our top concerns. To maintain the present Navy and Marine aircraft inventory (fixed and rotary wing) to support projected force structure requires procurement of an average of approximately 210 new aircraft annually.

General **Gray**. The Marine Corps Aviation Plan (AVPLAN), published annually, is the document which facilitates mid-range FMF aviation planning. The plan is a 10-year projection developed at HQMC in conjunction with the Marine Corps Combat Development Command at Quantico, Virginia. It incorporates approved requirements and guidance contained within the Department of the Navy Integrated Amphibious Operations and USMC Air Support Requirements Study. The AVPLAN filters this data through projected fiscal and manpower constraints prior to publication and is used as the Marine Corps input to the annual Naval Aviation Plan (NAP).

B-1B CONVENTIONAL CAPABILITY

Senator **Glenn**. General McPeak, on March 15, 1991, in your television briefing on the Persian Gulf air war, you stated that the Iraqi Air Force had over 1,000 combat aircraft and ". . . a state-of-the-art air defense system." Given such a formidable threat facing U.S. Air Forces, and the potential vulnerability of the B-52s as evidenced by the considerable losses over North Vietnam in 1972, why wasn't an all-out effort begun last August to complete the B-1 conventional bombing certification?

General **McPeak**. The primary role of the B-1B is strategic nuclear deterrence. On the other hand, the primary role of two of our B-52G squadrons is conventional. These B-52G aircraft have been enhanced to carry a wide variety of munitions and the aircrews train exclusively for the conventional mission. Due to the specialized training that these aircrews receive, the B-52G was the strategic bombardment aircraft of choice during Desert Storm.

Senator **Glenn**. General McPeak, the B-1, like the B-2 now, was sold to Congress as having both a conventional and nuclear capability. The B-1 became operational in 1986. When will it be certified for a conventional combat role?

General **McPeak**. The B-1B conventional weapon release system was certified for use on July 21, 1989. Completion of Follow-on Operational Test and Evaluation (FOT&E) for the MK-82 500-pound class general purpose munition is incomplete due to a problem with the FMU-139 fuze. The FMU-139 fuze problem is not unique to the B-1B. After new fuzes were procured, their use for completing FOT&E was delayed because the fuzes were diverted for use in Operation Desert Storm. FOT&E testing is scheduled to resume April 8, 1991 and is expected to be complete by May 1, 1991. Once FOT&E testing is complete, the B-1B could be used in a combat scenario with the MK-82. Beginning in fiscal year 1992, the B-1B will be modified with MilStd-1760 wiring which will give it the capability to carry a wide variety of conventional munitions to include smart ("fire-and-forget") weapons and precision-guided munitions.

COMBAT TRAINING

Senator **GLENN**. General Vuono, Admiral Kelso, General McPeak, and General Gray, in recent testimony before this committee, General Galvin stated that the superb combat performance of the joint forces in the Persian Gulf was due in large measure to their superior training. Specifically, General Galvin said that the service's various warfare and training centers, such as the National Training Center, Red Flag, Navy Strike Warfare Center, and Top Gun, provided our forces the ". . . first 15 days of combat experience." Do you agree with General Galvin and if so, are these training centers adequately funded in the fiscal years 1992–1993 budget request?

General **VUONO**. Yes. With regard to the Army, the Combat Training Centers (CTC) played a critical role in preparing our units for the conflict. In the late 1970s, the Army recognized the need to provide units with a level of combat training not previously available. That recognition arose from the fact that future conflicts demanded combat ready units which would be rapidly committed to combat with little or no immediate preparation. To meet this training challenge the National Training Center (NTC) was established in 1961. It was followed by the Joint Readiness Training Center (JRTC) in 1967 and the Combat Maneuver Training Center (CMTC) and Battle Command Training Program (BCTP) in 1966. Together these CTCs provide highly demanding and realistic training for Army light, heavy, and Special Operations units at echelons from squad/crew through corps staff and under extremely realistic conditions of low, mid, and high intensity conflict. The NTC, JRTC, and CMTC conduct field training exercises, termed rotations, focused at combat brigades. The BCTP conducts computer simulation supported command post exercises for division and corps battle staffs. All four CTCs are similar in that they are staffed with experienced officers and non-commissioned officers who serve as Observer/Controllers (O/C). These personnel assess unit performance during CTC rotations against a uniform standard of performance based on Army and joint tactics and doctrine. Each unit and the Army receives valuable feedback on performance which assists the unit in focusing its home station training and helps the Army develop the best possible tactics, doctrine, equipment, and organizations for the future. CTC training is further enhanced by the presence of an uncompromising Opposing Force (OPFOR) which is capable of replicating likely opponents. In doing so, the OPFOR represent a challenging, thinking enemy. Additionally, CTCs have training facilities equipped to provide a unit training experience beyond that possible at the unit's home station. Instrumentation to support data collection and feedback is a key part of the training facility at each CTC.

CTCs have been well supported by the Army, the Department of Defense, and Congress. Operations and Maintenance, Army (OMA) funding in the fiscal years 1992–1993 budget is adequate.

Admiral **KELSO**. The two Navy commands discussed, the Naval Strike Warfare Center at Fallon, Nevada, and the Navy Fighter Weapons School, in San Diego, California, have dramatically improved our power projection and strike warfare capabilities in the last 6 years. The way we are training Naval aviators, Tomahawk shooters, Navy SEALS, marines, and employ amphibious forces, has come together at one focused point which we call our Strike Warfare "Center for Excellence." The Navy recognizes the importance of these two schools and continues to emphasize their important contribution to our warfighting efforts. Currently, each of these two schools is adequately funded within the President's budget.

General **MCPEAK**. I agree with General Galvin's assessment. For the Air Force's part, the National Training Center and Red Flag are adequately funded for the fiscal years 1992–1993.

General **GRAY**. I do agree with General Galvin. Combined arms exercises conducted at the Marine Corps Air-Ground Combat Center at Twentynine Palms, California, and the Weapons Tactics and Instructor Courses provided by the Marine Air Weapons and Tactics Squadron One at Yuma, Arizona, have provided your Marine Corps with the requisite experience needed to excel on the battlefield. Notwithstanding Operation and Maintenance funding reductions in the 1992–1993 Presidential budget, we will continue to conduct this type training at fiscal year 1990 levels.

MILITARY FORCE PACKAGES

Senator **GLENN**. General Vuono, Admiral Kelso, General McPeak, and General Gray, the Chairman of the Joint Chiefs of Staff, General Powell, recently testified before this committee on the proposed establishment of four "Military Force Packages: Strategic Forces; Atlantic Forces; Pacific Forces; and Contingency Forces." Would you tell the committee what role you had, if any, in the development of these military force packages?

General **Vuono**. I am satisfied with the the Army's role in the ongoing development process of these military force packages. The Army participated with the other services in the development of these force packages through the Joint Strategic Planning System process. The four military force packages describe a set of force structure and capabilities for the 1990s and beyond. The Chairman's view is projected for the out-years and we are moving in that direction. The military force package concept and the discussion to date represents a general formulation and thus accommodates future decisions concerning the Unified Command Plan and the specific apportionment of forces. These decisions will be reached by the Chairman after consulting with the service Chiefs.

Admiral **Kelso**. The force packages were developed as part of the Base Force Study conducted by the Joint Staff. Service staff representatives were later brought into discussion of these force packages as part of the Joint Military Net Assessment (JMNA) drafted by the Joint Staff. The JMNA and the force packages were discussed with the service Chiefs.

General **McPeak**. None, initially, because development started before I became Chief of Staff. Shortly after my tenure began, the Chairman gave the other Chiefs and me a notional, long-range command structure that generally embodied the four military force packages you mention. He asked us to reflect on the organizational concept and give our thoughts on it. Last November, I discussed my ideas with the Chairman, his J-5, General Butler, and the other Chiefs. In January 1991, I again discussed the concept with General Butler, who was modifying it based on inputs from the November session. I gave General Butler additional ideas, some of which I believe he incorporated into this evolving proposal.

General **Gray**. I have been aware of the Chairman's concept, and I have understood it to be a concept, for some time now. He has presented it to the service Chiefs and CINCs as part of an overall vision of the future on several occasions over the past 18 months. The actual details that lie beyond the concept, and the forces that might go in each "package," have not yet been worked out. So I have played no official role yet, but as a member of the Joint Chiefs of Staff I will, as we grapple with the complexities of converting concept to reality.

Senator **Glenn**. General Vuono, Admiral Kelso, General McPeak, and General Gray, what is your opinion of the future roles and missions of your service as envisioned in the force packages?

General **Vuono**. There is no conflict between these force packages and the future roles and missions of the Army. In fact these packages were designed to optimize the roles and missions of all the services as laid out in law and DOD Directive 5100.1. The Army will be prepared to support the unified commanders with well organized, trained, and equipped forces for the conduct of prompt and sustained land combat operations. We will also provide forces for the conduct of all peacetime engagement missions which a CINC may require.

Admiral **Kelso**. The roles and missions of the Navy—to organize, train, equip, and provide forces for the conduct of prompt and sustained combat operations at sea (to include deterrence, power projection, forward presence, and crisis response, among others)—remain fundamentally sound and can be executed with complete success within the envisioned force package construct. Indeed, these four force packages cast into sharp focus the vital role that naval forces will play in the post Cold War world—from sea-based strategic nuclear forces for deterrence to forward-deployed forces capable of going anywhere with full logistic, medical, and repair support.

In the Strategic Force Package, the Navy is a key element of the nuclear triad. This mission of strategic deterrence, met by our Trident and our ASW submarines, will continue as a vital part of our national military strategy, countering the enduring reality of multinational nuclear arsenals in this new world order.

Within Atlantic and Pacific Force Packages, the Navy's mission of forward presence and power projection will continue to be accomplished by our mobile naval forces. Naval task forces are extremely flexible and are able to operate anywhere in the world independent of overseas bases. The maritime superiority derived from this capability has historically been key to U.S. interests in the Atlantic and Pacific regions. This same maritime superiority will continue to provide the National Command Authority with a wide range of options during peace, crisis, and war as the U.S. faces increasing limits on access and influence.

Finally, the Contingency Force Package envisions an initial crisis response capability that has historically been the Navy's strong suit. It has been said that the end of the Cold War has made the world safe for regional conflict. A survey of the last decade alone will show that Navy forces provided a military contingency response in over 50 crises. Forward-deployed carrier battle groups, amphibious ready groups, and attack submarines will continue to be the crisis response naval forces that invariably are among the first on scene in time of crisis or conflict.

General **McPeak**. I do not envision that the "Military Force Package" proposal will result in any major changes in the future roles and functions of the USAF. After all, airpower is airpower, regardless of how we organizationally structure the USAF. Our doctrine will still call for operations that cooperate with and complement the operations of the other services, such as close air support and interdiction. We will still conduct airlift, reconnaissance, space, and special operations to benefit all services as we saw so conclusively in Operations Desert Shield/Desert Storm. We will still fight the all-important air battle to gain and hold air superiority, and we will continue to conduct strategic offensive strikes against vital centers of enemy power. These missions result from the inherent capabilities of airpower and will not be affected by the organizational changes contained in the "Military Force Package" proposal. However, I do believe this proposal will result in a more efficient organization, enabling us to more effectively accomplish these roles and functions.

General **Gray**. Our roles and missions will remain the same. The roles and missions legislated by Congress at the end of World War II have proven to be of enduring utility. They have created in each of the services an institutionalized ethos that has allowed them to focus on the performance of specific functions. As a result, the forces needed to execute our revised military strategy already exist within today's military force structure. A maritime nation with global interests and responsibilities has a critical requirement for an expeditionary capability which is based on combined arms forces specifically organized, trained, and equipped for sustained operations in an austere and hostile environment, and capable of a forcible entry against a determined opponent. As envisioned by the 82nd Congress, Marine Expeditionary Forces, Carrier Battle Groups, and Amphibious Forces are capable of rapid response with a unique and unmatched forcible entry capability. And we come with the sustainability to stay. We will remain an expeditionary force in readiness, ideally suited in our forward deployed afloat posture for forward presence, and able to move quickly as a crisis response and contingency control force. Our aggregate utility has been vividly demonstrated during our simultaneous operations in the Gulf, Liberia, Somalia, the Philippines, and Latin America and exercises in Korea, Europe, and the Western Pacific. Our utility, and these associated roles and missions, will remain relevant in the force "packages" of the future.

Questions Submitted by Senator Strom Thurmond

CONTINGENCY RESERVE FORCES

Senator **Thurmond**. General Vuono, in your revised strategy on the use of Reserve component forces, you indicate the Active Army will be configured to sustain deployed units for about 30 days without substantial Reserve component augmentation. What type of Reserve units do you anticipate being assigned to the contingency force?

General **Vuono**. The unpredictability and uncertainty of the future international environment will require units that are prepared for immediate deployment without delays for additional training. Hence, rapid initial deployment capabilities must be provided by primarily Active component units. The Active Army will be structured to sustain deployed units for about 30 days without substantial Reserve component augmentation.

Because of the substantially reduced size of the Active component, the Army will rely on the timely mobilization of Reserve component forces for all major and prolonged contingencies as well as general war. We envision the Reserve components providing combat support and combat service support to the force for contingency operations.

TRIAD

Senator **Thurmond**. General McPeak, during a previous hearing, General Odom testified that the United States could eliminate one leg of the strategic Triad. When pressed as to which leg of the Triad he would eliminate, he indicated the air-breathing leg. I expect that you disagree with that assessment. If you had to make a choice, which leg of the Triad would be the most expendable?

General McPEAK. I am a firm believer in the Triad. As you know, the Triad provides our Nation with an assured retaliatory capability. The redundancy of the Triad protects us against a catastrophic failure of any one of the three legs. Each leg of the Triad makes a unique contribution. Though not an exhaustive list, here are a few examples: ICBMs provide prompt, hard-target kill capability; SSBNs provide a very survivable missile fleet; and bombers provide us with stability in crisis and flexibility during nuclear or conventional conflict. Though things have changed dramatically in the Soviet Union, they still retain, and improve, an impressive strategic nuclear force. At this point, and for the foreseeable future, it is not prudent for our Nation to abandon the Triad.

CLOSE AIR SUPPORT

Senator THURMOND. General McPeak, based on the close air support during Operation Desert Storm, is there any basis to reconsider the future of the A-10? If not, why not?

General McPEAK. Our Desert Storm experience has not provided a basis to change USAF plans to retire some of the A-10 force. In fact, many of the factors that led to the decision to reduce the total number of A-10s were validated during the conflict.

A major factor that led to our decision to reduce the A-10 inventory was its survivability in high threat environments. Studies and computer models have been predicting for years that the A-10 would not be survivable in high threat environments. Desert Storm provided evidence that the A-10 has a tough time surviving against some of the current day threats. During the war, A-10s were withheld from areas where the threat was greatest. Also, although the A-10 flew 40-50 percent fewer total sorties than the F-16 during the war, the same number of both aircraft were lost. As threats improve, survivability can be expected to be further reduced. It should be noted, however, that these figures do not take into account differences in environments and tactics. It is still early in our analysis to pin down exact causes for loss rates and make meaningful comparisons between systems.

A second major factor leading to reducing the total number of A-10s was our need to maintain a flexible force as the total fighter force structure shrinks. That means that our fighters will have to be able to perform multiple missions whenever possible. The A-10 has always been dedicated to providing close air support (CAS), but has limited capability to perform battlefield air interdiction (BAI) in a high threat environment. Replacement systems will have equal or better ability to perform CAS, but will have the added ability to perform high-threat BAI. Although the A-10 operated "behind enemy lines" during Desert Storm, it did so in what is considered a low-to-medium threat environment. Had the threat been more severe, we would have been forced to withhold the A-10s until the threat was reduced or removed.

Finally, I would like to clarify our plan for A-10s. In the next 5 years we will retire only about 40 percent of the A-10s. Just over 15 percent will be redesignated OA-10s, and the other 45 percent will remain in the force structure. Retention of more A-10s would result in either a larger fighter force (more expensive), or in retirement of newer, more capable fighters to maintain the same total fighter force size.

SOVIET CARRIER THREAT

Senator THURMOND. Admiral Kelso, despite its fiscal problems, the Soviet Union appears to be continuing construction of its aircraft carriers. What can you tell us about the Soviet carrier program and what threat does it pose to the freedom of the seas?

Admiral KELSO. [Deleted.]

QUESTIONS SUBMITTED BY SENATOR TRENT LOTT

TRAINING SUPPORT FUNDING

Senator LOTT. General Vuono, the Army will be going through a significant reduction in forces during fiscal year 1992, even with the expected waivers. Training support funding for readiness is based on force structure numbers times the training activity goals, e.g. number of units times miles in training or range training days. In determining your operation and maintenance (O&M) funding needs for fiscal year 1992, which force structure did you use—the lower one, which you cannot reach, and may be given a waiver for and therefore, short of funds; or the one which is based on the real world and assumed a waiver, which would mean funds should be adequate?

General VUONO. The lower one. We used a 660,000 Active military end-strength figure to determine training support funding readiness. Fiscal year 1992 Active military end-strength data does not include Desert Shield/Desert Storm manning levels.

ENVIRONMENTAL CONCERNS

Senator LOTT. Admiral Kelso, the Navy has a number of unique environmental concerns which must be addressed. The Navy is the largest user of Halon and other ozone depleting substances. What is the status of efforts to eliminate their use and/or find acceptable substitutes?

Admiral KELSO. The Navy has made considerable progress toward developing and implementing a program aimed at eliminating use of ozone depleting substances (ODSs), specifically Halons, chlorofluorocarbons (CFCs), and methyl chloroform. We now have a comprehensive program planned, budgeted, and underway, and we have already taken specific actions to reduce uses and emissions. Our program includes major efforts in substitute chemicals, alternative non-CFC technologies, chemical conservation, and inventory management.

The Navy plans a long-term program to phase out these chemicals. The general strategy for phasing out CFCs and Halons within the Navy is to identify and adopt suitable substitute chemicals as soon as practicable and to develop and implement, as necessary, new equipment and systems that do not use ozone depleting substances. Until we can eliminate our use of these chemicals, we will conserve the chemicals and plan for strategic reserves of CFCs and Halons to fulfill mission requirements.

A systematic effort to eliminate unnecessary uses and conserve CFC refrigerants, CFC solvents, and Halon firefighting agents is underway. Our initial conservation efforts have focused on chemical recovery and recycling. We are assessing where and how CFC emissions occur, how we can prevent or minimize atmospheric emissions, and what our minimum annual requirements needs might be in the future to operate and maintain the fleet. The most notable accomplishment to date is the elimination of over 60 percent of the Navy's consumption of Halon 1301, by substituting an environmentally safe substitute (SF6) for testing Halon 1301 fire protection systems. Emissions of CFC-113 and methyl chloroform solvents have been reduced substantially because Navy facilities now recover and recycle approximately 1½ million pounds per year.

In the area of substitute refrigerants, the Navy has conducted the most extensive testing in the U.S. of four potential alternative refrigerants. Once initial performance tests of substitute refrigerants prove the substitute works in modified shipboard cooling systems, the Navy must initiate longer term laboratory tests to assess the stability of the substitute in Navy equipment and its effects on equipment service life and maintenance. If results continue to be promising, the Navy must design equipment modification packages, and then fabricate and test a prototype for each major type of cooling plant on Navy ships and aircraft. As the prototype tests prove successful, the Navy can contract to produce and install the equipment modifications and substitute refrigerants.

In the area of alternative cooling technologies, the Navy has initiated studies in thermoelectric (TE) and other non-CFC cooling technologies, to assess their feasibility for near-term use on existing ships or long-term development for future ships.

The Navy is a major participant in the Solvents Working Group, an industry/government consortium working to identify suitable safe substitutes for CFC-113 use in manufacturing electronic circuit boards. Once substitutes are proved acceptable to Navy users, the Navy would change the MILSPECs and require use of acceptable alternatives.

In summary, the Navy has a comprehensive and aggressive program underway to eliminate our use of these chemicals because we recognize that production of these mission-critical chemicals will stop soon. We recognize the enormity of this task and the time and resources required to complete it.

Senator LOTT. Admiral Kelso, off-shore and on-shore discharges from Navy ships are also being increasingly more regulated. On-board storage awaiting port and ship modifications may be required. How is the Navy staying ahead of these new restrictions and are the actions affecting Navy operations?

Admiral KELSO. Increasingly complex and stringent environmental regulations in the United States and around the world are challenging our ability to operate Navy vessels and sustain power projection in environmentally restricted waters. Currently, U.S. Navy ship operations are constrained in some international and territorial waters because ships lack onboard storage capabilities and appropriate shipboard waste management systems to comply with waste discharge limitations. To stay ahead of the emerging restrictions, the Navy established in March 1989, the goal of "environmentally sound ships for the 21st century."

The Navy plans to design and produce future ships that could operate unconstrained by environmental regulations in the 21st century. For existing ships, the Navy is developing and installing shipboard systems to effectively manage oily wastes, non-oily wastewaters, and solid wastes (trash, garbage, plastic waste, and medical waste). The shipboard systems must destroy or appropriately treat these wastes generated onboard. If wastes cannot be destroyed or retained onboard, they must be sufficiently treated so that overboard discharges are considered nonpolluting. Liquid wastes, such as blackwater, graywater, and oily bilge wastes, must be treated to produce an environmentally acceptable effluent.

While international standards affecting ship discharges are well-defined, we have difficulty predicting what will be considered non-polluting discharges in the territorial waters of certain nations, particularly the United States. To deal with the uncertain discharge regulations in the U.S. and identify effluent quality systems, we are taking actions to get uniform national discharge standards established for all Department of Defense vessels.

READINESS ACTIVITIES

Senator LOTT. General McPeak, the Air Force is planning a reduction in force structure, with reductions in manpower and units. Does the Air Force plan to keep the current flying hours per pilot/per crew or will flying hours also be reduced?

General MCPEAK. The overall flying hour program will be reduced, but the flying hours per pilot per crew will remain at current levels.

Senator LOTT. General McPeak, does the Air Force plan to implement a flexible readiness concept in fiscal year 1992, whereby some units will fly/exercise more than other units?

General MCPEAK. The Air Force has studied the concept and does not plan to implement the program in fiscal year 1992.

[Whereupon, at 5:30 p.m., the committee adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEARS 1992 AND 1993

WEDNESDAY, MARCH 20, 1991

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

FISCAL YEARS 1992 AND 1993 DEFENSE AUTHORIZATION REQUEST AND THE FISCAL YEARS 1992–1997 FUTURE YEAR DEFENSE PLAN

The committee met, pursuant to notice, at 9:45 a.m., in room SR-222, Russell Senate Office Building, Senator Sam Nunn (chairman) presiding.

Committee members present: Senators Nunn, Exon, Levin, Kennedy, Bingaman, Dixon, Wirth, Warner, Thurmond, Cohen, McCain, Lott, Coats, Mack, and Smith.

Committee staff members present: Arnold L. Punaro, staff director; and Richard D. DeBobes, counsel.

Professional staff members present: Robert E. Bayer, Robert G. Bell, Creighton Greene, John J. Hamre, William E. Hoehn, Jr., David S. Lyles, and Frederick F.Y. Pang.

Minority staff members present: Patrick A. Tucker, minority staff director and counsel; Romie L. Brownlee, deputy staff director for the minority; Ronald P. Kelly, George W. Lauffer, John E. Mansfield, Durwood W. Ringo, Jr., and Mark B. Robinson, professional staff members.

Staff assistants present: Barbara Gallo, Mary J. Kampo, and Julie W. Kemp.

Committee members' assistants present: Andrew W. Johnson, assistant to Senator Exon; Kenneth N. Luongo, assistant to Senator Levin; William J. Lynn, assistant to Senator Kennedy; Charles C. Smith, assistant to Senator Dixon; Milton D. Beach, assistant to Senator Glenn; Jefferson B. Seabright, assistant to Senator Wirth; Terence M. Lynch, assistant to Senator Shelby; Dale F. Gerry, assistant to Senator Cohen; Thomas G. Moore, assistant to Senator Wallop; Samuel D. Adcock, assistant to Senator Lott; Eric H. Thoemmes, assistant to Senator Coats; and Thomas L. Lankford, assistant to Senator Smith.

STATEMENT OF SENATOR SAM NUNN, CHAIRMAN

Chairman NUNN. The committee will come to order.

This morning the Armed Services Committee meets to continue our hearings on the fiscal years 1992-1993 defense budget and on the Future Year Defense Plan. Thus far, our committee has heard testimony from the Secretary of Defense and the Chairman of the Joint Chiefs of Staff on the new military strategy and the budget request; from the Director of Central Intelligence and the Director of Defense Intelligence Agency on the global threat; from outside witnesses on trends and developments in the Soviet Union and Eastern Europe, from most of the combatant commanders; and yesterday from the uniformed Chiefs of the military services.

Today we meet to receive testimony from the Secretaries of the military departments. Under the Goldwater-Nichols Department of Defense Reorganization Act, the military departments are responsible for fulfilling the current and future operational requirements of the Unified and Specified Commanders in Chief.

We have invited each of the Secretaries to review the key programs of each of their Departments, and have asked that they give special attention to how those programs support the requirements of the combatant commands, consistent with the strategy outlined by the Secretary of Defense. We have asked them to describe what "lessons learned" from Operations Desert Shield-Desert Storm have been reflected in their budget plan.

In addition, we have invited the Secretaries to give their individual views on how their Departments should change over the coming years.

I ask unanimous consent to insert Senator Warner's and my letters of invitation into the record. Without objection, they will be so inserted.

[The information follows:]

U.S. Senate,
Committee on Armed Services,
Washington, DC, March 5, 1991.

Hon. Michael P.W. Stone,
Secretary of the Army,
Department of the Army,
Washington, D.C.

Dear Mr. Secretary: We would like to invite you to testify with the other Service Secretaries on Wednesday, March 20, at 9:00 a.m., on the budget request for fiscal years 1992 and 1993 and the fiscal years 1992-1997 defense program.

The Committee has already heard from Secretary Cheney and General Powell on the new military strategy and the current budget request, and from Director Webster and General Soyster on the global threat. We have also heard from outside witnesses on trends and developments in Eastern Europe and the Soviet Union and from the unified and specified combatant commanders.

Under the Goldwater-Nichols Department of Defense Reorganization Act, the Military Departments are responsible for providing the material and personnel needs of the Unified and Specified Commanders-in-Chief. We invite you to review the key programs of the Department of the Army. We ask that you give special attention to how those programs support the requirements of the combatant commands, consistent with the strategy outlined by the Secretary of Defense and what "lessons learned" from Operations Desert Shield/Desert Storm have been reflected in the budget plan. In addition, your views on how the Army should change over the coming years will be important to the Committee's decisions this year.

Thank you for your willingness to testify. If you have any questions, please do not hesitate to contact us or to have your staff contact Mr. Creighton Greene of the Committee staff. We look forward to your testimony.

Sincerely,

Sam Nunn,
Chairman.
John W. Warner,
Ranking Minority Member.

U.S. Senate,
Committee on Armed Forces,
Washington, DC, March 5, 1991.

Hon. H. Lawrence Garrett III,
Secretary of the Navy,
Department of the Navy,
Washington, D.C.

Dear Mr. Secretary: We would like to invite you to testify with the other Service Secretaries on Wednesday, March 20, at 9:00 a.m., on the budget request for fiscal years 1992 and 1993 and the fiscal years 1992–1997 defense program.

The Committee has already heard from Secretary Cheney and General Powell on the new military strategy and the current budget request, and from Director Webster and General Soyster on the global threat. We have also heard from outside witnesses on trends and developments in Eastern Europe and the Soviet Union and from the unified and specified combatant commanders.

Under the Goldwater-Nichols Department of Defense Reorganization Act, the Military Departments are responsible for providing the material and personnel needs of the Unified and Specified Commanders-in-Chief. We invite you to review the key programs of the Department of the Navy. We ask that you give special attention to how those programs support the requirements of the combatant commands, consistent with the strategy outlined by the Secretary of Defense and what "lessons learned" from Operations Desert Shield/Desert Storm have been reflected in the budget plan. In addition, your views on how the Navy should change over the coming years will be important to the Committee's decisions this year.

Thank you for your willingness to testify. If you have any questions, please do not hesitate to contact us or to have your staff contact Mr. Creighton Greene of the Committee staff. We look forward to your testimony.

Sincerely,

Sam Nunn,
Chairman.
John W. Warner,
Ranking Minority Member.

U.S. Senate,
Committee on Armed Services,
Washington, DC, March 5, 1991.

Hon. Donald B. Rice,
Secretary of the Air Force,
Department of the Air Force,
Washington, D.C.

Dear Mr. Secretary: We would like to invite you to testify with the other Service Secretaries on Wednesday, March 20, at 9:00 a.m., on the budget request for fiscal years 1992 and 1993 and the fiscal years 1992–1997 defense program.

The Committee has already heard from Secretary Cheney and General Powell on the new military strategy and the current budget request, and from Director Webster and General Soyster on the global threat. We have also heard from outside witnesses on trends and developments in Eastern Europe and the Soviet Union and from the unified and specified combatant commanders.

Under the Goldwater-Nichols Department of Defense Reorganization Act, the Military Departments are responsible for providing the material and personnel needs of the Unified and Specified Commanders-in-Chief. We invite you to review the key programs of the Department of the Air Force. We ask that you give special attention to how those programs support the requirements of the combatant commands, consistent with the strategy outlined by the Secretary of Defense and what "lessons learned" from Operations Desert Shield/Desert Storm have been reflected in the budget plan. In addition, your views on how the Air Force should change over the coming years will be important to the Committee's decisions this year.

Thank you for your willingness to testify. If you have any questions, please do not hesitate to contact us or to have your staff contact Mr. Creighton Greene of the Committee staff. We look forward to your testimony.

Sincerely,

SAM NUNN,
Chairman.
JOHN W. WARNER,
Rankimg Minority Member.

Chairman NUNN. This morning we extend a warm welcome from the committee to Secretary of the Army, Michael Stone; Secretary of the Navy, Larry Garrett; and Secretary of the Air Force, Don Rice. The committee appreciates the talent and dedication that all of you bring to the Department of Defense. We look forward to hearing from you.

We normally would have had the service Chiefs after the service Secretaries. It was because of a scheduling problem that we ended up having the Chiefs first, but we welcome you here this morning.

I understand that Secretary Rice has prepared briefing charts. The committee would note that General McPeak yesterday took a total of about 45 seconds in his opening statement, so he left some time for the Air Force this morning, and we will accord you that time. We will not expect anyone else to meet that 45 second standard, which is a new precedent for the committee from General McPeak.

Senator COHEN. From the Chairman?

Chairman NUNN. From the Chairman, it would be a new precedent too, and probably from the Senator from Maine.

The Senator from Virginia.

Senator WARNER. Thank you very much, Mr. Chairman. I join you in welcoming these three distinguished public servants, and I hope that they, in their usual modesty, accept some of the credit for this incredible victory that we have witnessed in the Gulf combat. It reflects a lot of hard work and training that each of you have conveyed down through your Department to those who performed in the Gulf.

Thank you, Mr. Chairman.

Chairman NUNN. Thank you, Senator Warner.

I share those sentiments, and I hope each of you will express to your staffs, who have worked long and hard and probably do not get the credit they deserve, that we feel they are a part of this entire operation. It was a joint operation by people back here who were doing the work, as well as, those in the field, and we are grateful to all of you for a superb performance.

Secretary Stone, we will start with you this morning. Then we will move to Secretary Garrett, then Secretary Rice.

Before you proceed, I will enter into the record the prepared statement of Senator Dixon.

[The prepared statement of Senator Dixon follows:]

PREPARED STATEMENT BY SENATOR ALAN J. DIXON

Mr. Chairman, at the outset, I want to say again that it is good to see the men and women finally coming home from the Gulf, home to the welcome they so rightly deserve as true American heroes.

It is a pleasure to have with us today the service Secretaries: Honorables Michael P.W. Stone, H. Lawrence Garrett III and Donald B. Rice.

I look forward to hearing from them about the "Defense Authorization Request for Fiscal Years 1992 and 1993" in relation to what they view as necessary for a strong national defense posture.

I am particularly concerned with Force Structure, especially as we draw down the force. I want to ensure there is enough emphasis on Readiness, Sustainability and Support; we must make sure we do not end up with a hollow force.

I am also concerned with our ability to move our troops and material in a crisis on short notice over long distances. Although our record in Desert Shield/Storm on the surface appears favorable, we must remember that 50 percent of our sealift was with foreign flag ships. We also must remember that the air lift was not forced to operate in a hostile environment.

Finally, I am concerned with our industrial base. I understand we will not have the next generation of many major systems for quite a few years down the road, and yet we are stopping production on many of our current systems. Will the industrial base be there when we go to the next generation of systems, or will most of the companies be out of business?

I look forward to the testimony of our distinguished panel.

Thank you, Mr. Chairman.

Senator NUNN. Mr. Stone.

STATEMENT OF HONORABLE MICHAEL P.W. STONE, SECRETARY OF THE ARMY

Mr. STONE. Thank you, Mr. Chairman. It is a pleasure to be with you this morning. If I have a little raspy voice, I apologize for it. I seem to have picked it up in a location where a lot of your colleagues were last week, and we had the pleasure of running across each other there.

I am not sure I am going to equal General McPeak's record, either, but I do have only a few short informal remarks to make. With your concurrence, Mr. Chairman, I would like to insert a formal statement in the record.

Chairman NUNN. Whatever additional material you would like to put in the record, each of you, it will be inserted after your oral statements without objection.

Mr. STONE. Thank you, Senator.

In their previous appearances before this committee, both Secretary Cheney and Chairman Powell talked about a set of realities in the world, and they have drawn a distinction in those realities between what they call emerging realities and enduring realities.

The emerging realities that they have focused on have been, of course, the end of the Cold War as we have known it for 40 years, and the second, the fact that there are going to be continuing pressures exerted on the fiscal resources that are available to the military services.

However, they equally stressed the enduring realities of the world, the reality of Soviet military power, the reality of preserving a free and stable Europe, and the importance of that objective to the United States; a forward presence in the Far East; and the reality of uncertainties.

Within the context of that particular statement, one of the views expressed by those two gentlemen really struck me, and that is projecting power—and this is a quotation: "Projecting power quickly is a demanding, complex operation."

The Army budget that is before you recognizes these realities and puts funding behind programs that take them into account, as well as the complexities of that power projection. Within the context of that particular reality and complexities, I would like to put on record one personal comment on the Army's 1992 budget, and that is the only issue that I will address.

Of the four main Army components of that budget, Manpower, Operations and Maintenance, Procurement, and Research and Development, I am going to concentrate only on the procurement account. I am happy to report to you—and I know that considerable time was used yesterday in the hearing on this subject—but I would like to reiterate it. I am pleased to report to you that all of the Army equipment—virtually, without exception, all of the Army equipment that was used in Desert Storm—performed well: tracked equipment, aircraft equipment, deep fire equipment, the new trucks that we have been fielding during the last couple of years, right on down the line.

That equipment performed exceptionally well, both in terms of readiness rates, availability, and in effectiveness. The deficiencies that we had were very few. I will just mention a couple of them.

Yes, we are still using a lot of old radios in the field. We are acquiring new radios. Those new radios have not yet been extensively fielded, but they are coming along, and where they were used in Desert Storm they too performed exceptionally well.

We need some more two and a half ton tactical trucks. The Army is in the final stages of a procurement competition and those new trucks will be starting to come to the Army by the end of this calendar year. The new five ton truck that we had in service performed exceptionally well.

What few deficiencies exist we will fix. I do need to leave you with one overwhelming thought that relates to the procurement accounts. I would like to give you the four figures that relate to the last 4 years—excuse me, the last 2 years and the next 2 years in our procurement accounts. In 1990, fiscal year 1990, the Army procurement account was $13.9 billion; in 1991, the year in which we are active today, it is $9 billion. The budget before you, the 1992 budget, is $8 billion. The 1993 budget is $7.6 billion.

Although there are some minor adjustments required to make those figures perfectly comparable, the trend line is grave in its implications for the Army. If it continues to go down we simply cannot perform our constitutional responsibilities and execute the missions that have been given to us.

I sincerely ask your committee's consideration of that problem for the Army as we debate the budget during the balance of the budget cycle.

In conclusion, I would like to emphasize that I am sure, as in years past, we will be able to resolve whatever issues, from the Army side, relate to that budget, and I look forward to working with your committee, Mr. Chairman, in doing that. Thank you.

[The prepared statement of Mr. Stone follows:

PREPARED STATEMENT BY HON. MICHAEL P. W. STONE, SECRETARY OF THE ARMY

Mr. Chairman and members of the committee:

It is an honor to appear again before the committee to report on the Army's achievements and to outline the Army's plans and challenges for the coming years.

Although we have been challenged over the past year, we have met those challenges and have answered the Nation's call both at home and abroad with distinction.

Last year at this time, we spoke of Operation "Just Cause" and its impact on the Army and the Nation. While clearly a challenge that was met head-on with dispatch and professionalism, that operation is dwarfed by the recently concluded and extremely successful combat campaign in Southwest Asia. Operation "Desert Storm," the largest deployment of U.S. soldiers since Vietnam, clearly demonstrates that the Army is a strategic force fully capable of meeting a wide range of contingencies on short notice, of performing in the joint and combined arena, and of providing highly capable forces to the warfighting commanders in chief (CINCs).

My concluding remarks to you last year included the statement, "We are ready to face the challenges of the future." The events that have occurred in Saudi Arabia over the past 7 months and your Army's response to them validates that statement. Our response is a reaffirmation and validation of the six fundamental imperatives that have guided and will continue to guide the Army's development—quality soldiers and civilians, forward-looking warfighting doctrine, an appropriate mix of forces, tough and realistic training, necessary focused modernization, and competent, confident leaders.

CSA LEGACY—THE SIX IMPERATIVES

The trained and ready Army that you see deployed around the world today is a result of the cooperation, sacrifices, and hard work of many persons in and out of uniform. No one has been more instrumental in shaping that force than our Army Chief of Staff, Gen. Carl E. Vuono. As you know, he completes his fourth year as Chief this summer after orchestrating some of the most dramatic changes in our Army's history. Those changes reflect and embody the six imperatives mentioned earlier. Each of them requires comment.

QUALITY

The quality of our men and women is the sine qua non that is the cornerstone of the Army. This single intangible characteristic enables us to fulfill our worldwide strategic roles. During the past 4 years, the percentage of high school graduates accessed in the Army has risen from about 90 percent to over 95 percent. Other considerations help attract and retain a quality force. The establishment of the Army Communities of Excellence program is an example. So is the program to construct 59 Child Development Centers and 28 Physical Fitness Training Centers and to modernize or construct over 25,100 barracks spaces during the past 4 years. Recruiting and retaining talented men and women—the best that our Nation has to offer—must continue to be the Army's top priority.

DOCTRINE

The twin doctrines of AirLand Battle and AirLand Battle-Future form the basic rationale for leader development, force design, material requirements, and training focus. General Vuono has put his personal stamp on the development and revalidation of much of the Army's doctrine particularly in the area of Training and of Low Intensity Conflict.

FORCE MIX

In an effort to maintain the appropriate mix of armored, light and special operations forces in the Active and Reserve components, significant restructuring of the force has been accomplished under General Vuono's direction. Faced with the need to reduce the force due to a changing international environment and diminishing resources for defense, the Army has begun to shape the force of the future. Brigades from the 9th and 4th Infantry Divisions and the 2nd Armored Division have been inactivated, and the 194th Separate Armored Brigade has been reorganized into an armored battalion task force. Current Army plans call for further reductions toward a smaller, yet capable force.

TRAINING

Training prepares soldiers, leaders, and units to fight and win in combat—our basic mission. General Vuono's unrelenting challenge to the Army has been to demand tough and realistic training for our soldiers. The successes of Operations Just Cause and Desert Storm to date demonstrate that his challenge has been met. The Army also has shown the excellence of its training standard in numerous international competitions over the past 4 years. In events ranging from individual marksmanship to tank gunnery, the Army has excelled. Significant team results have included: the Boeselager Cup (a gunnery event for cavalry units), first place 1987, 1988, and 1990; World Helicopter Championship, first place 1990; and the Australian Army Skill at Arms Meeting, second place 1988, first place 1990. Central to the Army's strategy of maintaining highly trained leaders and soldiers are the combat training centers: the National Training Center at Fort Irwin, California; the Joint Readiness Training Center currently at Fort Chaffee, Arkansas; the Combat Maneuver Training Center at Hohenfels, Germany; and the Battle Command Training Program operating from Fort Leavenworth, Kansas. These programs have made a great contribution to improving and sustaining the professionalism and warfighting ability of the Total Army.

MODERNIZATION

We have witnessed, as Operation Desert Storm concludes, the payoff of the Army's modernization investments made over the past years. Key battlefield systems fielded during the 1980's that have proved their worth in the test of combat include: the Apache helicopter, the Abrams tank, the Bradley Fighting Vehicle, the Multiple Launched Rocket System, Army Tactical Missile System, and the Patriot air defense system.

LEADER DEVELOPMENT

There is no substitute for leaders who are competent in their profession, responsible for their soldiers, and committed to the defense of their Nation. Leader development involves the Total Army—officers, noncommissioned officers, and civilians of both the Active and Reserve components. Over the past 4 years, almost 20,000 students have graduated from the Army's top professional development schools. Additionally, the other programs continue to provide the Reserve component and our civilian leaders the same type of quality education provided to our soldiers.

Operation Desert Storm and its precursor, Desert Shield, represent your Army at its best—from the initial deployment of the 82nd Airborne Division's Ready Brigade within 31 hours of the Nation's call, to the current commitment of over 275,000 young men and women, the embodiment of those Imperatives. "Trained and Ready" has typified their posture, as it does the posture of other soldiers stationed here in the United States or deployed around the world in places like Korea, Latin America, and Western Europe. All have volunteered to defend our Nation; all are prepared to support our national objectives.

As he looks at today's Army, General Vuono can take justifiable pride in the large role he played in building that Army. I chose to salute him publicly, in this forum, for his vision, his tireless efforts, and his selfless dedication to his Army and Nation.

BEYOND DESERT SHIELD/STORM

Now let's turn to some other significant events of 1990.

Our forward-deployed forces in Europe and Asia have maintained a high state of readiness and continue to act as a deterrent against aggression. Some USAREUR forces are deployed in support of Desert Storm while others maintain vigilance in Western Europe. Meanwhile our soldiers in Korea guard our national interests in that part of the world, as do our forces in Panama.

Reaffirming the bilateral agreement with the Soviet Union to reduce stockpiles of chemical weapons, the Army, acting as the Department of Defense Executive Agent, successfully removed over 100,000 chemical projectiles from Europe and delivered them to Johnston Island in the Pacific for destruction.

As a means of promoting security and stability in regions throughout the world, the Army's security assistance program provided support to 132 foreign countries and to 7 international organizations. The effectiveness of such support can be seen in the improved readiness status of several of the coalition forces in Southwest Asia after the United States transferred, through the security assistance program, substantial amounts of military material.

Equally important to the Nation's needs was the Army's continued support to civilian authorities within the United States. During the past year, soldiers have assisted local communities in flood and tornado relief and in fighting numerous forest fires in the west and south. Additionally, over 2,000 soldiers from the Active and Reserve components participated daily in the execution of the Army's portion of the Department of Defense's national drug control strategy.

The Army has improved management efficiency with the implementation of DOD's Defense Management Report initiatives. The streamlining of the acquisition process, the development of the Army Acquisition Corps, and other initiatives will result in substantial savings during fiscal years 1991–1995, and the initial benefits were seen in fiscal year 1990.

I want to touch on just a few of the other management efficiency efforts designed to support the Army during the next decade, including: environmental enhancement, Base Realignment and Closure actions, Army Communities of Excellence, and civilian personnel modernization.

The Army is committed to the prevention of environmental damage and the protection and stewardship of the environment. After a critical self-review, the Army spent $187 million during 1990 on evaluating and cleaning up contamination caused by past practices and an additional $200 million to meet current regulatory requirements. Under the Army's Installation Restoration Program, remedial cleanup work was completed at 130 sites during the past year. Likewise, work is underway in the Formerly Used Defense Sites Program, for which the Army is the executive agent, with remedial action completed at 365 sites.

We continue to seek greater efficiencies in stationing forces both at home and overseas. The Army's Base Realignment and Closure initiatives will allow the Army to close uneconomical and inefficient installations and to consolidate major headquarters or functional missions.

The Army Communities of Excellence (ACOE) program continues to improve our soldiers' quality of life as it works to improve community services and foster community excellence. The ACOE program makes an unambiguous contribution to promoting and sustaining a quality and ready force.

The Army's Civilian Modernization Plan represents a commitment to continuing the investment we have made in building a trained and ready civilian work force. One initiative, the Army's Civilian Leader Development Program, which was fully implemented during fiscal year 1990, provides direction for the progressive and sequential development of civilian leaders from entry level to Senior Executive Service positions.

TOMORROW'S VISION

The Army's vision of the future is predicated on the realities of a changing world environment. The focus of U.S. security strategy has shifted away from one based on containment of the Soviet Union by forward defense to one based on achieving our objectives by forward presence supported by the projection of military power from the United States. This change in focus requires the Army to restructure its forces and to adjust its strategic roles in support of the new strategy.

While the Soviet Union's attitude toward the West has shifted positively, thus reducing the probability of confrontation, the recent use of military force in the Baltic States to quell dissent indicates a need for a balance of U.S. optimism and concern. Soviet focus remains inward, toward restructuring, but their conventional and nuclear weapons modernization efforts continue. We must continue to view the events in Moscow, as we have in the past, with an eye toward the Soviet's capabilities, not their stated intentions.

Despite the reduced probability of East-West conflict, the war in the Middle East clearly emphasizes the fact that significant threats remain in many regions of the world where the United States has interests. Regional instability in areas such as Latin America, the proliferation of nuclear, chemical, and missile technology to developing nations, and aggressive, well-armed regional powers such as Iraq pose multiple challenges to United States' interests. Additionally, the continuing flow of illicit drugs into the country threaten the safety and security of the Nation at home. International terrorism remains a threat that not only affects the United States, but the world.

Our challenge now is to maintain our present defense capabilities while simultaneously moving in three directions. We must and we will continue to provide support to the servicemen and women, both Active and Reserve, who have demonstrated their courage and conviction, in Operation Desert Storm. While we focus on the post-war efforts in Southwest Asia, we must not lose sight of the total Army, and our responsibility to sustain a global force—trained and ready to meet any contingency worldwide. We move in these directions while we reshape the Army in light of the changing international environment and diminished resources available for national defense.

While the challenge of pursuing three simultaneous courses is formidable, there are also other challenges that confront the Army over the next few years that must be met. Modernizing equipment in an era of declining resources, managing our force structure, and keeping operating costs under control represent the type of problems we face.

The Army's modernization efforts will focus on improving the versatility, deployability, and lethality of our equipment to enable our soldiers to fight successfully wherever U.S. interests are threatened. In years past, the Army developed the equipment that is being used today in Operation Desert Storm: Patriot, Apache, Abrams, Bradley, and the HMMWV. The Patriot missile system has gained its baptism under fire and has excelled. The Apache helicopter has also demonstrated the wisdom of our vision, as it has proved to be the fully capable tank killer that it was designed to be. Our Abrams tanks and Bradley Fighting Vehicles, the cornerstone of our armored forces, spearheaded the ground campaign and contributed immeasurably to the rapid destruction of the Iraqi forces. The forgotten hero of the Gulf War is the HMMWV truck, the replacement vehicle for the old ¼-ton jeep. It is the main means of transportation for a majority of our forces and has proven to be very reliable. Past investments have paid big dividends.

With your support, our future investments will pay similar dividends. Tough choices must be made and priorities issued for the systems of tomorrow. The Army's modernization priorities include: Light Helicopter, Armored Systems Modernization, armor-antiarmor, forward-area air defense, deep attack, and command and control.

Army modernization is a continuous process that reflects strategy, doctrine, and technological progress. Aggressive research and development of key advanced technologies and the protection of our technology and production bases will, in the long-term, provide the best warfighting capabilities for the money spent.

Managing people, the quality soldiers and civilians that serve so valiantly today, will be a major challenge in the uncertain times ahead. Operation Desert Storm has introduced some extraordinary requirements for manpower that has caused the Army to increase temporarily in strength. "Stop loss" programs continue to add 3,000-4,000 soldiers a month to the total end strength, while Reserve component soldiers are still being called to Active duty. The result is that, despite congressional mandates that the Army reduce endstrength, the Army has had to grow temporarily. The Army's drawdown plan to meet future endstrength requirements is sound, but needs time to execute.

As we take strides to reduce the force, we must make sure that we don't destroy what we have built over the past 17 years. The All-Volunteer force that we have today is responsible for the Army's successes. To reduce that force too rapidly or with too little thought for our soldiers' welfare would be an injustice and would be a sorry reward for their efforts in the Gulf.

Our top priority is to maintain the quality of the force. We must maintain the high standards that we have established, both for those who wish to enter the Army for short enlistments and for those who wish to remain for a career. We are committed to taking care of the soldiers, civilians and their families during the transition by retaining sufficient quality of life programs, a proper flow of promotions, and adequate career opportunities.

The 1992/1993 President's budget reflects the Army's recognition of the changes in the world environment and the fiscal realities facing our Nation. It is a budget that will maintain a quality force in terms of people and equipment. We pledged last year to provide this country with a force that would be fully capable of meeting any contingency anywhere in the world. Operations Just Cause and Desert Storm provide unambiguous proof that we have met that pledge.

We remain committed to protecting the character of our force by remaining sensitive to quality of life, training them to the highest standards possible, and providing them with the best equipment. The future Army will be smaller but, with your help, no less capable. The 1992/1993 budget is formulated to ensure that the Army remains a viable and potent force. Your support of our soldiers in the Gulf means a lot to them, and your support of their future will mean even more.

CONCLUSION

Your Army today has drawn its strength and character from the traditions and achievements of the past. Throughout its history, the Army has been the Nation's loyal servant at home as well as in overseas locations. It has been an organized, disciplined resource that the Nation could rely on to do whatever had to be done. During peacetime, the American people knew that they could count on their Army to take care of priorities at home, and when trouble broke out overseas, the Army was trained and ready to fight.

Our soldiers today are a priceless asset that the Nation can count on. These soldiers are a testimony to the success of the policies and programs designed to train and equip an Army that can stand up to any threat, any time, any place, and under any conditions. I am proud of the Army's contribution to the success of Operation Desert Storm, but I, like America, mourn the ultimate price paid by the heroic young men and women who have given their lives for freedom. They shall be long remembered.

The American people must always know that they can count on their Army as a stabilizing force abroad and as a resource at home. Together, America and its Army can continue to provide for the common defense while helping to strengthen our position abroad and improving our lives at home.

Mr. Chairman, thank you for the opportunity to tell you and your committee of the magnificent men and women who serve the cause of peace around the world. It is because of their dedication to this Nation's ideals that your Army is the best in our Nation's history. I will be happy to address your questions.

Chairman NUNN. Thank you, Secretary Stone, Secretary Garrett.

STATEMENT OF HONORABLE H. LAWRENCE GARRETT III, SECRETARY OF THE NAVY

Mr. GARRETT. Thank you very much, Mr. Chairman. I am also very pleased to be here and discuss with you and members of the committee the Navy budget for fiscal years 1992 and 1993.

Mr. Chairman, over the last 10 years I think it is no secret that we have made substantial and concerted investments in our military security, not least of which has gone into sea power. That investment clearly, I think, has paid invaluable dividends: first, by accelerating the end of the Cold War, by ensuring our ability to counter aggression, and by serving notice that America is a credible moral force for international stability and human freedom.

The extraordinary men and women of our armed services, backed by the support of this Congress now over many years, proved that point decisively 3 weeks ago when they secured the liberation of Kuwait from Saddam Hussein. They have beyond doubt earned our unqualified pride, our respect, and our gratitude.

The challenge before us, as Mr. Stone alluded, is to preserve that investment at a time of great geostrategic uncertainty and to do so in a way that makes both fiscal and military sense. The Navy budget you have before you, Mr. Chairman, addresses that challenge. The maritime policy upon which it is built derives in turn from four key realities about the evolving world order, all of them validated by our recent experience in Operations Desert Shield and Desert Storm.

The first is the fact the United States must remain firmly engaged in a world that is economically interdependent. The vast majority of our trading partners are on the opposite side of one ocean or another. Our economy, our way of life, and even our physical security depend on both the safety of our allies and the security of our seaborne trade routes.

Current events make it abundantly clear, I submit, that we simply cannot afford to retreat into isolationism or to abandon our maritime superiority.

Second is America's increasingly limited access to overseas bases and military facilities. Our national strategy will depend even more than it does today on self-contained, forward-deployed maritime forces that can project a wide range of power from international waters anywhere on the globe.

A third important factor is the diversity of potential threats to American and allied security, from terrorist attack to conventional armed aggression to nuclear blackmail.

Finally, the threat of a global war with the Soviet Union has diminished, but the future of perestroika is still uncertain and the powerful potential of the Soviet Navy has not lessened. At the same time, weapons of mass destruction have proliferated throughout the world.

Mr. Chairman, one of the clearest lessons we have learned, I submit, so far from the Persian Gulf war is the fact that it was not won by sea power, it was not won by air power, it was not won by land power, but rather by joint military power forged from the unique, essential and complementary capabilities of each of our armed services.

The Navy and Marine Corps, for example, are uniquely suited to maintaining forward-deployed, self-contained, combat-ready units around the globe, and our policy of doing just that allowed the United States to confront Iraq with the striking power of two aircraft carrier battle groups from almost the outset of Operation Desert Storm, providing a deterrent.

Furthermore, the first fully operational combat-ready mechanized American force in Saudi Arabia was the Seventh Marine Expeditionary Brigade, supported by equipment loaded in forward-deployed Maritime Prepositioning Ships, a very valuable lesson coming out of this experience.

The ability of our maritime forces to deploy immediately and in force did several things for us. First, it quickly and convincingly demonstrated America's resolve to stop Iraqi aggression, and I am convinced, as are several members of the national intelligence community, that it did in fact deter Saddam Hussein from an offensive incursion further south.

Second, our absolute control of the sea allowed for the massive unopposed—and I emphasize "unopposed"—sealift of decisive land-based forces into the region. In effect, sea control was a prerequisite for the land war.

Third, naval assets enforced the United Nations sanctions and sealed Iraq off from seaborne resupply routes.

And last, once combat operations commenced, maritime units provided important offensive options for the theater commanders, including carrier-based tactical air, working in conjunction with the massive land-based air, offshore Tomahawk and gunfire support, marine expeditionary forces, amphibious forces, forcible entry capability, and a wide range of electronic warfare, command and control, Naval Special Forces, and logistical assets.

All of these naval roles, Mr. Chairman, are essential to the joint, integrated fabric of America's military power. Our naval policy therefore is to support the Nation with responsive forward-deployed Navy and Marine forces that can perform their missions worldwide, adjust to rapidly changing strategic and tactical circumstances, and complement and often enable the land-based capabilities of our Air Force and Army partners.

It is toward that end that we have identified our budget priorities. The most important priority, Mr. Chairman, has been, is, and will remain our people. The Persian Gulf war was won by skilled, courageous and dedicated men and women who volunteered to serve their Nation at extraordinary personal risk.

Their concerns are my concerns: compensation, quality of life, training, and the benefits we provide them as service members, veterans, and retirees. They are, Mr. Chairman, I submit, without question our most precious resource.

Following very closely is the training of those people, for our ability to respond to rapidly developing crises depends on units and personnel that are practiced, that are professional, and that are combat-ready. Ships, airplanes and tanks are of very little use without well-trained people to man them.

Following training is readiness and sustainability, and by that I mean the ability to bring a credible and effective force to bear in combat when and if the national leadership requires such an option. We were able to confront Iraqi aggression because we had the means to support and sustain a full-scale offensive operation for an indefinite period of time.

To address sophisticated and volatile threats into the next century, we will need to maintain that standard of readiness and sustainability.

Another critical priority for us is to maintain a balanced force as we build down the Navy and the Marine Corps force structure. We are, Mr. Chairman, on the road to a smaller Navy and a smaller Marine Corps. Our objective in that process is to maintain an appropriate balance between the war-fighting capabilities of the sea services, while also balancing our force structure against manpower needs.

I submit that it makes no sense, no sense at all, to keep our harbors filled with ships and our hangars with airplanes if that means sacrificing the training, the readiness, the quality and the morale of the people required to make them work.

A keystone of our ability to build and maintain a Navy is our infrastructure and our industrial base. America's strategic advantage depends fundamentally on a healthy, productive, innovative, and competitive national industry. We simply cannot afford to drive our defense industrial base, especially our vital shipbuilding industry, offshore.

Technology is another key priority. I think Operations Desert Shield and Desert Storm amply validated our traditional emphasis on technological superiority. Advanced high tech weapons systems not only served to save American lives, they significantly limited death and damage to non-combatants.

As our force structure reduces in size, it becomes even more important, Mr. Chairman, that we preserve our technological advantage with vigorous research, development, and operational evaluation.

Mr. Chairman, the new world that we face is one of great promise, but it is also one of great danger. The stability, the freedom, and the prosperity of the international community will in the end depend on America's consistent strength and its consistent leadership. With that in mind, we have in the Department of the Navy looked very hard not only at the challenges to America's security, but at the way in which we do our own business.

The budget before you represents a maritime force which is much smaller than we have had before, but one which remains combat capable, cost effective, and tailored to the threats that we are likely to face as the 20th century draws to a close.

Mr. Chairman, I thank you, and I will be happy to respond to your questions after Secretary Rice concludes.

[The prepared statement of Mr. Garrett follows:]

POSTURE STATEMENT BY HON. H. LAWRENCE GARRETT III, SECRETARY OF THE NAVY

INTRODUCTION

Mr. Chairman, members of the committee, I welcome the opportunity today to review with you the posture of the Department of the Navy, to present our biennial budget for fiscal years 1992 and 1993, and to review the operations of our Navy and Marine Corps during the past year. This is my third appearance before this committee, once presenting this report as the Department's Under Secretary, and last year for the first time as Secretary of the Navy. I stated in my report a year ago, we see increasingly dramatic changes throughout the world. We are witnessing events that we could not have predicted in advance. These changes are shaping what the President has appropriately called a new world order.

I view the presentation of this posture statement as my most important task thus far as Secretary of the Navy. The events in today's headlines are among the most consequential for the United States since World War II. My message today is framed by the events in the Middle East, and it is very simple. Over the past decade we have chosen to invest a great deal in the U.S. Navy and the U.S. Marine Corps. In terms of naval power, we have bought a tremendous amount of capability with that investment. Since the defense build up, and prior to Operation Desert Storm, we had not been called upon to perform in combat to this degree, so we had not fully verified the wisdom of our force building. It is apparent now that we did the right thing. The vision of the national leadership has clearly been validated many times over. Navy and Marine Corps weapons, equipment, and people have combined to give the United States the most capable sea power in the world today. In and around the Persian Gulf, U.S. naval forces are participating in joint and combined combat operations to defend Saudi Arabia and liberate Kuwait.

Besides the Middle East conflict, U.S. naval forces remain deployed all around the globe, maintaining a forward presence in support of America's security objectives and global interests.

DESERT SHIELD AND DESERT STORM: NAVAL SUCCESSES

When Iraq invaded Kuwait on August 2, 1990, the Navy's Middle East Force, part of the existing Joint Task Force Middle East, had a total of eight ships assigned. U.S.S. *La Salle* (AGF-3) was in theater as the Force flagship, accompanied by one cruiser, one destroyer, and five frigates. To deter further Iraqi aggression, the aircraft carriers U.S.S. *Independence* (CV-62) and U.S.S. *Dwight D. Eisenhower* (CVN-69) moved immediately to the northern Arabian Sea and the eastern Mediterranean. Consequently, naval deterrent air power was on station 3 days before the ground force and land-based air force deployments began. Our Maritime Prepositioning Ships sortied from Guam and Diego Garcia on August 7. The first ship unloaded in Saudi Arabia one day after the lead Marine element arrived. Accordingly, the Seventh Marine Expeditionary Brigade (7th MEB) became the first fully operational, combat-ready, mechanized force in Saudi Arabia. The activation of over 70 ships from this Nation's Ready Reserve Force and the accompanying massive sealift operation paid off significantly. It is important to note that over 85 percent of United States supplies, munitions, and equipment in Saudi Arabia to date moved there by sea.

When Operation Desert Storm began last month, we had over 100 ships, 67,000 sailors, six aircraft carrier battle groups, two battleships, attack submarines, a 31-ship amphibious battle group with over 17,000 marines embarked, and a heavily reinforced Marine Expeditionary Force with over 68,000 marines ashore in theater.

Operation Desert Shield, which became Operation Desert Storm, is the largest, best sustained, and most successful maritime interdiction operation ever undertaken by the United States. In support of the United Nations' economic embargo of Iraq, we challenged and intercepted over 7,000 ships. Nothing got through from the sea.

The first shots of Operation Desert Storm were Tomahawk cruise missiles launched from our ships in the Persian Gulf and Red Sea against carefully selected military targets in Iraq. The cruise missile assault began an air campaign marked by unprecedented cooperation between U.S. and coalition forces. Our Navy carrier-based and Marine Corps land-based aircraft have played key roles throughout the campaign, providing about one-third of U.S. sorties. At the same time, the Navy has eliminated any threat posed by the Iraqi Navy. Our naval support throughout this joint and combined military effort is an unqualified success story and one of which we are justifiably proud.

During the force build up for Operation Desert Shield, many of our national successes were maritime successes. Naval forces provided to our Nation's leadership a wide range of options. We had the option to defend, the option to embargo, and eventually the option to reinforce our forces and eject Iraq from Kuwait. We had options that were immediately available without the assistance of any other nation, and we had options offering military support to other sovereign states outside the region.

The maritime interdiction operations in Operation Desert Shield were superb. In Operation Desert Storm, Saddam Hussein has learned too late the most essential lesson of seapower: You either have the ability to keep sea lanes open to provide for the economic well being of your nation, or you do not.

A clear lesson we have learned from interdiction and combat operations to date is the overwhelming advantage technology has given our Navy and Marine Corps. This advantage promises to allow us to end this conflict relatively quickly with the fewest number of American casualties.

Once again, sea control has proven to be a non-negotiable necessity for successful power projection. In the conflict with Iraq, sea control was nearly a given. However, in other potential regional conflicts, air superiority, surface superiority, and undersea superiority might well be more challenging. Achieving sea control and air superiority near land and over land will be complex and demanding. Systems designed for operations in the open ocean environment may not work as well. Warning and reaction time will be reduced and the tactical picture will be different. Our naval forces will have to be capable of achieving air, surface, and undersea superiority to ensure that follow-on ground and air forces can be quickly introduced. After land-based forces are on scene, we must provide the protection to ensure that sealift and airlift continue unabated, while enhancing from the sea America's land-based power projection capabilities. Simply stated, power projection operations beyond our own shores cannot be sustained without control of the sea.

NAVAL POLICY

The United States has been the world's preeminent maritime power since the end of World War II. We have been able to sail the high seas uncontested. Global peace and stability have been greatly enhanced and often guaranteed directly by U.S. maritime power. Today, however, we are facing severe reductions in naval forces. We are also facing changes in the international security environment. Our challenge is to sustain our traditional maritime preeminence through the effects of these changes.

Today we find ourselves amidst one of history's great ironies. While the world progresses toward democratization, conflict nevertheless continues in Southwest Asia. Events in the Soviet Union give us real cause for concern. On the Arabian peninsula and in the Persian Gulf we are engaged in a real war. When that war is over, we must continue to forge a national policy that is consistent with and which fosters the new world order. It will be especially important for the Department of the Navy to be realistic about expected resources and force structure. Nevertheless, we will continue our vital contribution to stability and security on the seas and throughout the littoral regions of the world.

Our naval policy begins with the principal charter of the Department of the Navy. Simply put, to the degree fiscal constraints permit, we must provide the Nation's military commanders with a Navy and a Marine Corps capable of performing their missions worldwide; naval forces which can sustain forward presence as called for by the national security strategy; and forces able to adjust to changing strategic and tactical circumstances.

There is general agreement in America that the world is no longer faced with an immediate Soviet threat. Rather than a world threatened by bipolar superpower confrontation, this is a world which will be shaped by multipolar interests and regional conflicts. In this world, we will have a smaller Navy and a smaller Marine Corps. We will, however, retain the elements of conventional deterrence, strategic nuclear deterrence, and the flexibility necessary to respond to threats throughout the world.

The distinct challenge to the Department of the Navy will be to sustain the maritime power which we currently possess. The goal of our defense programs is to provide flexible forces, forward deployed. They must be capable of conducting major sustained operations like Operation Desert Storm, yet be able to respond to contingencies like the non-combatant evacuations of Liberia and Mogadishu.

Even with a smaller Navy and Marine Corps we must maintain maritime superiority. Naval strength enables us to exercise world leadership across the oceans as we build new alliances while maintaining our traditional alliances.

1990 and 1991 are watershed years for our new naval policy. We are adjusting our naval forces to a new global strategic reality; we are nearer to the beginning of a period of transition than we are to the middle or the end of it.

Some of our past strategic and policy concepts are no longer applicable to the future. There are four implications of change to our U.S. naval policy:

— *Economic Interdependence.* We will have a continued global engagement, with naval forces providing presence throughout the world. We cannot afford to retreat into isolationism.

— *New Political Realities.* There will be limits on United States access throughout the world. We will not enjoy the overseas basing upon which we have previously relied. Sea-based forces will play a more central role during the early phases of future crises.

— *Different Threats.* These threats will include terrorists and Third World countries with state-of-the-art weapons. Some regional powers will threaten their neighbors. Some nations will strive to acquire or develop nuclear, chemical, and biological weapons, and have the will to use them. The emerging world may be even more prone to conflict than the old world of the superpower confrontation.

— *Uncertainty.* Timing, location, and even the identity of threats will be uncertain. We may not have clear warning, and we may not understand political motivation.

THE RECEDING SOVIET THREAT

Our traditional threat has been the Soviet Union, where fundamental forces of change are at work. The Soviets would like a calmer international climate, especially with respect to the United States. They would like to focus on their internal economic and political concerns. Last month, however, we saw a contradictory trend in Soviet policy, and it is disquieting.

The Soviets now have a declared defensive doctrine, which we have seen in their operations. Their military leadership has insisted that the threat of war with the United States has receded, yet they still consider military threats to the Soviet Union to be significant. In the naval environment, the Soviets remain just as capable today as they were 6 years ago. We have seen political changes and clear defensive intentions, but it would certainly be imprudent to dismiss the Soviet threat. We should not take irreversible action on our own while Soviet naval capabilities are this formidable, and while the Soviet political scene is so unstable and unpredictable.

NAVAL STRATEGY

If our strategy for the Cold War was one of containment, our new strategy should be one of stability, focusing on peacetime presence and regional conflict. We will prevent regional conflict where we can, engaging ourselves militarily only when we must. In the 1980s, our forces were built to counter the Soviet threat. In the 1990s, the forces we will retain and build must address peacetime presence, deal with regional contingencies, and continue to pace the Soviet threat. The decades since World War II required maritime superiority and so do the 1990s. Fiscal realities have also made affordability an important factor to be considered in sustaining maritime superiority. We must provide the best affordable mix of forces and capabilities. And we must maintain for the Navy and the Marine Corps a high state of readiness.

The hard work of freedom includes maintaining a regional peacetime presence. By maintaining a global forward presence with sea-based forces, we are not bound to any land mass, and can respond wherever Americans or American interests are threatened worldwide.

In our stability strategy, there is a fundamental shift in force structure and operations. Power projection forces have a greatly increased strategic value. Naval forces' striking capabilities are important, something clearly illustrated by Operation Desert Storm. Air strikes have been conducted by carrier-based aircraft. Tomahawk cruise missiles were launched from surface ships and submarines. The

Marine Corps has provided a forcible entry capability in amphibious warfare and rapid response with maritime prepositioned forces.

Given continued changes in the Soviet Union, we eventually expect to see a diminished open ocean anti-submarine warfare threat. It must be said, however, that while the potential for a Soviet threat on the open ocean has not diminished, Soviet intentions today are more clear with respect to a defensive deployment of forces. Their capabilities, however, have not exactly matched their strategic intentions. The high technological quality of the Soviet submarine threat, apart from political considerations, remains a major concern. We must retain viable force structures while we draw down to a level appropriate to the threats we expect to face. Some Soviet naval threat will continue, and we should be prepared to counter it as necessary. We are continually re-assessing the Soviet Union, and must reserve the right to rebuild in response to its action in the future.

FUTURE STRATEGY AND FORCE STRUCTURE

In the new world order, we may find an increasing maritime emphasis, mainly because the future of overseas basing is, at best, problematical. It would be wrong to withdraw to a "Fortress United States." Instead, we must ensure that elements of all services, particularly the naval services, are forward deployed. Our forward presence maintains stability for conventional deterrence and readiness for crisis response. Naval forces are almost always the first on scene in time of crisis and bring with them a full range of military options. If amphibious forcible entry becomes necessary, marines are always embarked on amphibious ships that are continually forward deployed.

As America serves the world fostering freedom and democracy, we may find more nations asserting their sovereignty by denying the U.S. bases for tactical aircraft, overflight rights, and forward basing of ground forces. Naval forces solve this problem. This is a principal reason for our national insistence on maintaining a strong Navy and Marine Corps.

In any joint operation, naval forces play a vital "stiff-arm" role to allow the rapid introduction of heavy ground forces and land-based air forces. This was clearly demonstrated last August in the opening days of Operation Desert Shield.

The cornerstone of United States defense policy is to provide credible deterrent forces, convincing any potential adversary that his contemplated aggression against U.S. national interests cannot succeed. Several capabilities are essential to achieve credible deterrence in the evolving international security environment. These capabilities are the essence of our naval force structure charter.

Strategic nuclear deterrent forces remain the bedrock of our national defense. Deterring Soviet nuclear capabilities is still essential to U.S. survival. Our nuclear powered strategic submarine force contributes to this deterrent and anchors the Navy's contributions to the Nation's defense.

Peacetime forward presence of U.S. naval forces is the main element of conventional deterrence. "Forward presence" is a change from the Cold War's "forward defense" in Europe, but there is little change from a historic U.S. naval perspective. It is consistent with the receding threat and reduced force levels driven by fiscal constraint. Forward presence is critical to deter aggression and preserve regional stability. Forward presence protects U.S. interests and provides the most visible evidence of our commitment to employ our military capability. With forward deployed forces, we can respond to crisis and control escalation beyond the initial outbreak of violence.

Peacetime forward presence is also critical to maintain our security alliances. We shall continue to maintain a forward maritime presence in the Pacific, the Indian Ocean, the Mediterranean, the Persian Gulf and Red Sea, the North Atlantic, the South Atlantic, and the waters around the North American continent.

The Department of the Navy must be prepared for a major regional contingency. The mobility of national forces is critical toward supporting this part of our national strategy. Strategic sealift, amphibious forces, and maritime prepositioning forces, in particular, are keys to our successful response to regional crises.

Our Nation must retain the capability to respond to a rapid shift in Soviet strategy which could return us quickly to bipolar global confrontation. The ability to reconstitute forces rapidly means that politically, we must make early decisions. This is particularly critical for naval forces, where shipbuilding is complex and long term. It is imperative that our naval industrial base be preserved.

PRIORITIES

The Department of the Navy fiscal year 1992/1993 budget responds to these challenges. The budget is based on complementing priorities. Our priorities are people, training and readiness, war preparedness, balanced force reductions and force structure, infrastructure and industrial base, and technology.

PEOPLE

Our most important budget priority for 1992 is maintaining the high quality of our sailors and marines. In today's headlines, we are increasingly focused on technology. We should not forget that this war is being fought not by machines, but by men and women of significant dedication, courage, and professionalism. Through their sacrifice we are winning the war in Southwest Asia. Through their efforts our strategy will succeed in the future. Their concerns are my concerns: compensation, quality of life, training, and the benefits we provide them as service members, veterans, and retirees. We have an all volunteer force and it works.

TRAINING AND READINESS

Ensuring that the Navy and Marine Corps are ready for combat is the most significant task facing the Department of the Navy. Training and readiness are essential to the execution of our naval strategy. Training and readiness are critical today, particularly when resources are limited and the future is uncertain. We are committed to ensuring that our naval forces are trained and equipped to respond to any contingency despite limited resources. We shall not return to a hollow force. Our forces will be smaller but just as capable of meeting the threats of the future.

WAR PREPAREDNESS

We were prepared in 1990 to respond to a crisis in Southwest Asia. Today, being prepared means sustainability, supporting full-scale offensive operations indefinitely. War preparedness into the 21st century will mean a realistically measured force level, guaranteeing our people quality of life while maintaining a full readiness and response capability.

BALANCED FORCE REDUCTIONS AND FORCE STRUCTURE

We have already begun building down toward a smaller, balanced force. As ships retire they will be replaced with more capable ships at less than a one-to-one ratio. Other ships will be retired when due for overhaul in order to cut back at the most cost-sensible point. Older submarines will be retired rather than undergoing nuclear refueling overhauls. Our Marine Corps will get smaller not only by reducing, but also by restructuring. The future force must meet the demands of peacetime presence and response to major regional crises. Because we will have less surge capability, some high tempo operations will become more difficult. We believe that the key to a smaller force is balance. We must avoid giving the perception of weakness that might cause a potential adversary to misread us, and therefore weaken the credibility of our deterrent strategy.

INFRASTRUCTURE AND INDUSTRIAL BASE

The United States cannot maintain strategic advantage without a credible, capable industrial base. The capability to expand substantially our shipbuilding may well be necessary in the future. The strength of our national industry is as important to the national security as our military forces. To be able to reconstitute forces, we need a vibrant industrial base. Its competitiveness must also be a priority.

TECHNOLOGY

One of our most demanding prerogatives is maintaining our current technological edge. We must continue, for example, to gauge the undersea warfare capability that over 200 attack submarines give the Soviets. As our strategy and the world order shift, we must refocus our technology on the changing threat. Technological superiority is non-negotiable. It demands a vigorous research and development program which will permit us not only to compete with advanced military technology, but also to strengthen our own technological base.

NAVAL FORCES IN THE NEW POST-COLD WAR ENVIRONMENT

Our budget goal is to balance the required reductions in our naval forces. Net adjustments will bring us to a future force of about 477 ships in fiscal year 1992, 464 ships in fiscal year 1993, and 451 ships in fiscal year 1995. Five force structure elements shape our reductions:

— 12 operational aircraft carriers to give us our required forward presence

— Enough amphibious ships to lift 2½ Marine Expeditionary Brigades

— Three smaller Marine Expeditionary Forces

— 18 Trident SSBNs

— An appropriate balance of other ships, including about 150 surface combatants.

With 451 ships in peacetime, naval forces can do the following:

— Sustain between two and three carriers forward deployed for presence and immediate crisis response

— Keep 14 SSNs deployed

— Keep between two and three amphibious ready groups, each with embarked marines, on station

— Provide 25 to 30 surface combatants for forward presence

— Sustain these deployments indefinitely, using about 30 percent of all forces forward deployed

— Tailor forces for specific operational and political circumstances

— Quickly change geographic disposition

— Form carrier and amphibious strike forces and respond to emerging crises within 1 to 7 days

— Sustain these levels for a prolonged period while providing the quality of life our sailors and marines deserve.

THE BUDGET

We are adapting our forces and our support organizations, and we are carefully re-evaluating our traditional missions. Even as the unpredictability of the future has grown, fiscal pressures have reduced available resources. Remaining resources must be focused on capabilities that are achievable and applicable to the new security environment.

Department of the Navy resource reductions have been aggressively managed by a number of initiatives, many of them evolving from the Defense Management Review. Supply depots and depot-level maintenance, for example, have consolidated more functions, resulting in significant savings. Unfortunately, it has not been possible to absorb all of the required reductions by management initiatives alone. Much of the reduction must be absorbed by force structure, as previously discussed, drawing the fleet down to 451 ships in fiscal year 1995.

Personnel end strength is being reduced hand-in-hand with force structure reductions. Mandated military personnel levels could eventually drive the force of active ships actually below the number we can afford. Prudent and timely base closures will be imperative in order to balance our infrastructure with fleet size. Fiscal year 1993 new-construction funding has been reduced to a minimum, pending the recommendations of the congressionally-chartered Defense Base Closure Commission.

We have terminated large acquisition programs, including the A-12 and P-7. The F/A-18 production rate has been reduced. Research and development of the Navy advanced tactical fighter has been terminated. Construction of the DDG-51 has been significantly reduced. Our *Wasp*-class (LHD-1) multi-purpose amphibious assault ship program has been reduced to five ships and by fiscal year 1997 all of the *Iwo Jima* (LPH-2) class amphibious assault ships will have been retired. The SSN-21 program has been scaled back. Construction of additional Trident submarines has been terminated. The Trident submarine backfit program has been delayed, and procurement of the Trident D-5 missile has been reduced accordingly. The MK-48 advanced capability torpedo program is being reduced to single-source production.

Funding for operating requirements related to Operation Desert Storm is not reflected in the Department's budget submission. Our tempo of operations is budgeted at historical levels in accordance with the budget summit decision to consider a supplemental appropriation for Operation Desert Storm and track its expenses off-budget.

FORCE AND MANPOWER LEVELS

The number of our deployable battle force ships and the size of our Fleet Marine Forces decline through the budget years. The budget request provides a total deployable battle force of 477 ships by the end of fiscal year 1992 and 464 ships by the end of fiscal year 1993.

New ships joining the battle force in fiscal year 1992 include three Aegis cruisers, one Aegis guided missile destroyer, one nuclear-powered aircraft carrier, one fast combat support ship, three mine warfare ships, one Trident submarine, four nucle-

nuclear-powered attack submarines, two amphibious warfare ships, two towed array surveillance ships, and four Military Sealift Command oilers.

New ships joining the battle force in fiscal year 1993 include three Aegis cruisers, two Aegis guided missile destroyers, one fast combat support ship, one amphibious assault ship, four mine countermeasures ships, one Trident submarine, three nuclear-powered attack submarines, one towed array surveillance ship and three Military Sealift Command oilers. Also in fiscal year 1993, one conventionally-powered aircraft carrier rejoins the battle force after completing a service life extension program.

We inactivate 75 ships and transfer eight *Knox*-class frigates to a non-deployable reserve status during fiscal year 1992. Thirty-two ships will be inactivated and one mine warfare ship will transfer to a non-deployable reserve status during fiscal year 1993.

We have designed an "Innovative Naval Reserve Concept" to enhance our reserve ship mobilization base in a highly cost effective way. Eight *Knox*-class, non-deployable reserve frigates will be "Type II" reserve training ships. Each will train its own selected reserve crew and four additional "Type III" reserve crews. These crews could reactivate 32 *Knox*-class "Type III" hulls kept ready for sea within 180 days.

Average unit operating tempo during the budget years will remain unchanged at 50.5 underway days per quarter for deployed units and 29 days per quarter for non-deployed units.

The number of active Navy carrier air wings will decrease from 13 to 12 by fiscal year 1992 and to 11 in fiscal year 1993. The number of Navy reserve carrier air wings will remain at two. We will retain three active and one reserve Marine Corps air wings. The configuration of both Navy and Marine Corps air wings will continue to be restructured. Our flying hour program provides 85 percent primary mission readiness.

In the Marine Corps, we are deactivating eight rifle companies, a regimental headquarters, an artillery battalion, a tank battalion, and an armored assault battalion. Marine aviation will deactivate an A-6 squadron and a KC-130 squadron.

We must continue to emphasize people as we transition to a smaller force. End strength will be significantly reduced in each of the first 5 years of the future years defense plan. We must ensure that the cuts we make do not result in hollow force structure and must work assiduously to avoid involuntary separations.

Our Total Force concept, adopted in 1973, was not combat tested until this year. Over 16,000 Naval reservists and 31,000 Marine Corps reservists have been recalled to date. They include Fleet Hospitals, Cargo Handling Battalions, Navy Seabees, and combat augmentation of the Marine Expeditionary Force. Every day of Operation Desert Storm is providing insight into the benefits of reserve mobilization. A ready, properly sized reserve force will be critical to the shape of our future force structure.

The budget reduces Navy active duty end strength by 18,321 in fiscal year 1992 and 15,400 in fiscal year 1993, resulting in a total end strength of 536,000. The budget also reduces Marine Corps Active duty end strength by 5,735 in fiscal year 1992 and 5,800 in fiscal year 1993, bringing end strength down to 182,200 by the end of fiscal year 1993. Reductions also come from the conversion of 3,338 military billets to civilian billets in fiscal year 1992, with 5,006 more billets converted in fiscal year 1993. Our Department of the Navy civilian end strength declines by 29,783 in fiscal year 1992 and 37,220 in fiscal year 1993.

NAVAL AVIATION

On August 2, 1990, when faced with the current military crisis, the President asked a familiar question: "Where are the carriers?" Within 5 days, two aircraft carrier battle groups were on station prepared to conduct prompt and sustained combat operations. Two more were en route. We may never know if Saddam Hussein intended to continue into Saudi Arabia, but this initial show of resolve undoubtedly deterred Iraq from further incursions. Our carriers provided us the time required to build our political coalition and move our land-based military forces into theater. Today, six carriers are on station and three more are on call.

Our carrier presence was no accident. U.S.S. *Dwight D. Eisenhower* (CVN-69) was on station in the Mediterranean Sea. U.S.S. *Independence* (CV-62) was in the eastern Indian Ocean in keeping with our historical deployment patterns. This response clearly demonstrates the wisdom of our national investment in carriers and their embarked air wings.

During fiscal year 1990, one new carrier, U.S.S. *Abraham Lincoln* (CVN-72), was commissioned, replacing the World War II vintage U.S.S. *Coral Sea* (CV-42). Three additional carriers are currently under construction and will replace older carriers. By retaining a base force of 12 operational carriers, we will sustain a strategy of forward presence independent of uncertain foreign basing rights. We are committed to maintaining the staying power necessary to see a crisis through to a stable conclusion.

We have an equally important investment in embarked carrier air wings. Today six carrier air wings and one significantly reinforced Marine air wing are engaged in combat. The success of Operation Desert Storm again attests to the wisdom of past priorities: aircraft modernization, weapons procurement, survivability, and joint interoperability programs.

The need to adjust to a new strategy and the realities of fiscal constraints has required many difficult decisions. The A-12 and P-7 programs were canceled due to inadequate contract performance.

Our fiscal year 1992 budget funds 36 F/A-18C-D aircraft and begins development of an F/A-18 range and payload upgrade targeted for fiscal year 1996 introduction. We are also working toward definition and acquisition of an A-6 replacement aircraft necessitated by the A-12 cancellation. Another key naval aviation research and development priority is Marine Corps medium lift replacement. We will continue modernizing our helicopter anti-submarine warfare capability, our logistics and counter-mine warfare capabilities, our combat search and rescue programs, and our undergraduate pilot training. Our budget will fund an upgrade for three EA-6B Prowler jets and begin the demonstration and validation phase of the next-generation attack aircraft.

SURFACE WARFARE

The opening salvo of Operation Desert Storm heralded a new age in Surface Warfare. For the first time, inland strikes were conducted not only by Navy and Marine aircraft, but also by the Tomahawk cruise missile. It was launched in combat for the first time from ships of our surface force.

This capability is the result of nearly two decades of dedicated research and development. The investment we made in this technology permits us to attack well-defended strategic targets with extreme accuracy. It preserves aircraft and their crews for missions which only manned aircraft can execute.

On the 4th of July, our newest Aegis combatant, the *Arleigh Burke* (DDG-51) guided missile destroyer, will enter the Fleet. In addition to *Arleigh Burke*, four other Aegis destroyers are under construction. We have a total of 17 DDG-51 class ships under contract.

The *Ticonderoga*-class Aegis guided missile cruiser has been one of the Navy's most successful acquisition programs. The 27th ship of this class is now under construction. Later this year the Navy will commission *Cowpens* (CG-63), *Gettysburg* (CG-64) and *Hue City* (CG-66).

Our budget for fiscal year 1992 includes five *Arleigh Burke*-class guided missile destroyers (DDG-51), one dock landing ship (cargo variant) (LSD(CV)), two coastal minehunters (MHC), one fast combat support ship (AOE), one oceanographic research ship (AGOR), and one survey ship (TAGS). Twelve landing craft air cushion (LCAC) are also budgeted.

Our budget for fiscal year 1993 includes four DDG-51s, one LSD (CV), two MHCs, one ocean surveillance ship (TAGOS) and two TAGSs.

Sixteen DDG-51s are planned for procurement between fiscal year 1991 and fiscal year 1994.

THE SUBMARINE FORCE

Our attack submarines have stealth, mobility, firepower, and endurance. They conduct intelligence gathering and surveillance missions, sea and land strike warfare, anti-submarine warfare, and special force operations.

The SSN-21 *Seawolf* submarine program will maintain this Nation's undersea superiority. It will also undergird our power projection capability and carry our submarine force into the 21st century with a significant technological advantage. The SSN-21 will double the firepower of today's most advanced submarine. It will have the highest tactical speed, be able to incorporate future technology, and will be the quietest submarine in the world, at any speed. Our budget requests one SSN-21 per year in fiscal years 1992 and 1993, continuing at this rate through fiscal year 1995. SSN-21 will ensure that our future submarine force will be superior to today's force and capable of defeating any developing threat.

Our strategic submarine force provides nearly 50 percent of U.S. strategic nuclear warheads for about 25 percent of our total national strategic budget. Its enormous contribution to the strategic triad was expanded in 1990 by the deployment of the Trident II D-5 missile. This missile has improved accuracy, greater range, and larger payload, allowing our strategic submarines to engage the entire range of strategic targets. The 18th Trident submarine, appropriated in fiscal year 1991, will be the last in its class.

MARINE CORPS PROGRAMS

The Marine Corps lines in the budget will fund ammunition, tracked combat vehicles, armaments, missiles, communication and electronics equipment, support vehicles, engineering equipment, and spare parts.

New equipment in fiscal year 1992, will include the Pedestal Mounted Stinger, Single Channel Ground and Air Radios (SINCGARS), and Night Vision Equipment. New equipment in fiscal year 1993 will include, among other items, the Advanced Anti-tank Weapons System—Medium (AAWS-M) and the Joint Service Imagery Processing System (JSIPS).

Marine Corps ammunition budget also includes increased numbers of munitions such as small arms, mortar and artillery rounds, grenades, and pyrotechnic devices.

SEALIFT

Operation Desert Shield gave us a unique opportunity to measure the performance of our Nation's sealift. The sealift effort has been immensely successful. Sealift moved equipment and supplies more rapidly and over a greater distance than in any other crisis in history. Our success validates the wisdom of recent investments in sealift.

Despite our successes, not all elements of our sealift program performed as we planned. The performance of our Ready Reserve Force was the greatest deficiency. In retrospect, the activation times we set were probably unrealistic, and we obviously need to take a fresh look at the maintenance of these ships. Commercial charter ships played a vital role. These charters will continue to figure prominently in any future sealift efforts. Like ships in the Ready Reserve Force, however, charters are not available quickly enough to meet early delivery requirements.

We are participants in the Mobility Requirements Study in response to congressional direction. It will nail down our sealift requirements and options. Meanwhile, we have concluded that additional roll-on/roll-off ships will almost certainly be required to improve the responsiveness of sealift. These ships would be well suited for maritime prepositioning, for a reduced operating status like that maintained by our fast sealift ships, or possibly for commercial charter.

In order to speed our acquisition responsiveness once the Mobility Requirements Study is completed, we have already begun a process leading to ship design, construction, or purchase of large, medium speed roll-on/roll-off ships.

RESEARCH AND DEVELOPMENT

Our ability to support U.S. national security objectives depends on our investments in research and development. We need technologically superior weapons systems to hedge against the future, when we anticipate that emerging regional powers will have first rate capabilities.

In the Department of the Navy, funds supporting full scale development of new systems grew by 60 percent from 1980 to 1990. Science and technology funding actually decreased over this same period. Our budget in the 1990s reverses this trend, putting greater emphasis on developing our scientific and technical base.

We recognize that we cannot afford to operate as many forces as we can build, and that we cannot build as many systems as we can develop. Given these conditions, it is clear that a firm technological foundation is the best way to maintain superior warfighting capabilities.

The Nation's emphasis on a growing technology base requires support for our national technical and scientific infrastructure. Basic research at universities and corporate laboratories is likewise essential to our Nation's future scientific and technological advances, including training our future scientists and engineers. Our basic research programs currently emphasize the ocean sciences, advanced materials, and information sciences.

Our exploratory development program funds basic research and gives it the technical maturity necessary to apply it to the Fleet and the Fleet Marine Force. It emphasizes technical areas with the greatest potential payoff consistent with warfare requirements. We have placed particular emphasis on the changing threat, low intensity conflict, shallow water anti-submarine warfare, local area air defense, and advanced amphibious assault.

In 1990, we combined our advanced technology development program with our technology base efforts. The Chief of Naval Research is now responsible for both. These programs develop science and technology with the most promising naval applications. Our emphasis is shifting, however, more toward Advanced Technology Demonstrations, direct involvement of industry, expediting startup times for new initiatives, and selection of high risk/high payoff projects for changing Fleet and Fleet Marine Force requirements.

In the budget for fiscal year 1992, growth occurs in the technology base, in defense-wide mission support, in advanced technology development, and in strategic programs. These increases are offset by a decline in tactical programs caused by the decline in the number of systems entering full scale development. There is also growth in fiscal year 1993 from increases in tactical programs. These programs include F/A-18 improvements, surface ship electric drive, anti-submarine warfare system improvements, and the next generation attack aircraft.

NAVAL RESERVE AND MARINE CORPS RESERVE

The events of the past 6 months have resulted in the most active role for our Navy and Marine Corps Reserve forces in the past 40 years.

In the Naval Reserve, the recall for Operation Desert Shield and Operation Desert Storm has drawn heavily on medical personnel. These reservists are being used largely to fill gaps in hospitals in the United States, but some medical reservists are also serving in theater. Our stateside medical facilities lost many active-duty staff members when Fleet hospital units deployed and the hospital ships USNS *Mercy* (TAH-19) and USNS *Comfort* (TAH-20) sailed for the Persian Gulf. These ships were among the first deployed to Operation Desert Shield in August 1990.

Our reserve specialists in Mobile Inshore Undersea Warfare (MIUW) units are serving in the Persian Gulf, providing harbor security and surveillance. The entire MIUW force is in the Naval Reserve. Their employment illustrates the Navy's reliance on Reserve personnel for a vital operational capability. Naval Reserve minesweepers are in the Persian Gulf, and reservists are manning the Military Sealift Command detachments which provide intra-theater sealift support. Reserve naval control of shipping units provide scheduling, routing, and liaison support.

The "Innovative Naval Reserve Concept" will be part of an expanded mobilization force. These ships will be dedicated exclusively to training, and designated FFTs.

In the budget, Naval Reserve forces are declining. The number of Naval Reserve force ships will decline from 54 in fiscal year 1991, to 40 in fiscal year 1992, and to 37 in fiscal year 1993. Our Naval Reserve air force will likewise decline: from 610 aircraft in fiscal year 1991, to 575 aircraft in fiscal year 1992, and to 552 aircraft in fiscal year 1993. Operating tempo be reduced from 21 days per quarter in fiscal year 1991 to 18 days per quarter in fiscal years 1992 and 1993. Naval Reserve primary mission readiness will be 87 percent through the budget years.

As Marine Corps forces moved into Saudi Arabia, Marine Corps reservists began to play a crucial role in sustaining our active force. The Marine Corps Reserve provides a source for combat units and individual mobilization augmentees. The Reserves are structured, equipped, and trained to reinforce the Fleet Marine Force. They provide the Marine Corps with great strategic flexibility, supporting multiple operational commitments and lengthy sustainment.

Reserve Marine individual mobilization augmentees fill critical billets in the supporting establishment and have been a great resource in Operation Desert Shield and Operation Desert Storm. These Marines have manned crisis cells, provided communications support, and conducted airfield operations.

Since October, a number of selected Marine Corps Reserve units have been ordered to Active duty. Some of them have filled vacancies created by deploying Active units, while others have deployed to the Persian Gulf.

The Selected Marine Corps Reserve is also active in the war against illegal drugs and in disaster assistance. Marines have supported our counternarcotics joint task forces in the southern United States and in the Caribbean. During natural disasters, Marine Air Reserve forces have flown rescue missions, and provided logistics and communications support to the Federal Emergency Management Agency.

ANTI-SUBMARINE WARFARE

With changes in the world order and our own strategy, it is appropriate to reexamine the top-priority emphasis we have previously placed on countering the Soviet submarine threat. Although there has been no observed reduction of Soviet submarine capabilities, Soviet deployment patterns have significantly changed. Accordingly, anti-submarine warfare investment can once again proceed at a more measured pace, with particular emphasis on research and development. Clearly, our anti-submarine warfare capabilities and potential must be maintained to defend against any change in Soviet intentions.

Meanwhile, the proliferation of submarine technology in the Third World adds a new challenge. We will have to counter quiet, modern non-nuclear submarines in shallow and littoral waters to support power projection operations. It will be one of our toughest problems in the future. Although anti-submarine warfare no longer ranks as the Navy's number one warfighting priority, it will still be one of our top operational requirements.

C^3I

In Command, Control, Communications, and Intelligence (C^3I) and space warfare, our research and development program for combat data link, the Joint Tactical Information Distribution System (JTIDS), has met all reliability requirements in the first phase of operational testing. The Multi-Functional Information Distribution System (MIDS) (a NATO effort to build a smaller version of JTIDS) has completed program definition phase. MIDS is designed for smaller tactical aircraft, including the F/A-18. The Enhanced Modular Signal Processor (EMSP) program has delivered its first engineering development model. Major software development tools have been provided to the users. A concept and program plan were also developed for Space-Based Wide Area Surveillance.

Major acquisitions are underway in satellite communications. Procurement continues for extremely high frequency (EHF) satellite terminals used with the MILSTAR and ultra high frequency (UHF) follow-on satellite systems. We will procure and deploy nine UHF follow-on satellites, of which six will have EHF packages.

In direct support of Operation Desert Shield and Operation Desert Storm, our NAVSTAR satellite global positioning system has proven to be extremely valuable. We can derive accurate geographical positions independent of terrain. This system has given us a distinct tactical advantage in Saudi Arabia, the Persian Gulf, and the Red Sea.

COUNTERNARCOTICS OPERATIONS

We remain committed to detect and counter illegal drugs. Through joint operations and in cooperation with law enforcement agencies, we are preventing, disrupting, and deterring illegal drug distribution and use.

Testing, education, detection, and enforcement within the Navy and Marine Corps have reduced our incidence of drug abuse to about 1 percent.

Since 1981, the Department of the Navy has steadily increased support for law enforcement agencies, within the law and Federal regulations. Our sailors and marines play a prominent role in detecting and monitoring the movement of illegal drugs into the United States. The critical integration of C^3I support for counternarcotics operations has greatly increased the effectiveness of this program. Sailors and marines are involved in anti-drug operations with Joint Task Force Four in Key West, Florida; Joint Task Force Five in Alameda, California; and Joint Task Force Six in El Paso, Texas. The Department of Navy assists law enforcement efforts with training, facilities, logistics, maintenance, communications, and equipment. We provide E-2C Hawkeye aircraft to the Coast Guard and P-3C Orion maritime patrol aircraft to the U.S. Customs Service.

Since 1982, Navy ships have embarked United States Coast Guard Law Enforcement Detachments while providing most of the ships in the joint U.S. Caribbean Squadron. It is this squadron that conducts drug interdiction operations near drug source countries and in choke points.

Over 100 Department of the Navy personnel are presently assigned to anti-drug positions in other agencies including the Office of National Drug Control Policy, the State Department, and the Drug Enforcement Administration.

DEFENSE MANAGEMENT REPORT PROGRESS

The Department of the Navy strongly supports the Defense Management Review process. The Defense Management Report came from an intensive internal management review started in 1989. Consistent with its initiatives, our agenda for change will improve our acquisition process and more effectively manage limited resources.

We are currently implementing the provisions of the Defense Management Report, the Secretary of Defense Management Report Directives, and internal Department of the Navy initiatives. We will consolidate and reduce oversight, enhance decision authority and accountability of program managers and program executive officers, reduce infrastructure, find efficiencies in procurement, and improve the acquisition system.

ASSISTANT SECRETARY OF THE NAVY (RESEARCH, DEVELOPMENT AND ACQUISITION)

We have streamlined oversight of acquisition by creating the Office of the Assistant Secretary of the Navy for Research, Development and Acquisition. The ASN (RDA) is responsible for research, development, procurement, and information resources. He is the Navy acquisition executive, senior procurement executive, and information resource management official.

The Department of the Navy has also substantially reorganized its acquisition management structure. We have six program executive officers separate from Navy systems commands, along with five program managers for major acquisition programs reporting directly to the ASN (RDA). We are continuing to review and evaluate our management structure to identify additional improvements and efficiencies.

In reorganizing acquisition management, decision authority and accountability are clearly vested in line managers and are exercised at the lowest appropriate level. We have reduced the secretariat staff for acquisition review and oversight by more than 20 percent. Neither the staff of the Chief of Naval Operations nor that of the Commandant of the Marine Corps are directly involved in program acquisition activities.

We have moved aggressively to implement cost savings from both the Defense Management Review process and our own internal reviews. These initiatives include cost-saving reductions in the supply system and depot-level maintenance efficiencies. We have improved fiscal accounting and control and we have standardized our automated data processing systems. We have also improved the efficiency of Navy Industrial Fund activities including shipyards, aviation depots, and laboratories.

We will continue to focus on finding additional potential efficiencies in our procurement process because management review is not a one-time effort. It requires constant improvement of management by reducing overhead and infrastructure costs while enhancing weapons system performance. As we reduce the infrastructure and realize cost savings, we must continue to maintain the highest standards. Moreover, if we can lower support costs simply by reducing the cost of doing business, we will reduce the impact of the current fiscal environment.

ASSISTANT SECRETARY OF THE NAVY (INSTALLATIONS AND ENVIRONMENT)

Also as part of the Defense Management Review initiatives, the Department of the Navy reorganization has included the establishment of the Office of the Assistant Secretary of the Navy for Installations and Environment. This action strengthens our management of the shore establishment and develops environmental, safety, and occupational health programs to support our operating forces.

ENVIRONMENT

Our fiscal year 1992 budget request reflects an increase in environmental funding, demonstrating our commitment to environmental concerns. We are determined to promote an ethic of environmental protection.

To control shipboard pollution, we are installing hardware to remove oil from bilge discharges. Shipboard trash compactors and solid waste pulpers will be purchased in fiscal year 1992. We recently completed a demonstration project that converted 13 tons of ships' plastic waste into park benches. We are pursuing methods to conserve or replace chemicals used in firefighting and other naval operations.

Sixty percent of our shore installations have recycling programs; the rest will have them by the end of this calendar year. We collected over $12 million from recycling last year and used the money to support morale, welfare, and recreation programs.

Because most Navy and Marine Corps bases are on coastal lands, we have custody of some of the Nation's most sensitive ecosystems. We have joined with other conservation organizations to establish natural resource conservation programs. Last September, we established the first watchable wildlife area within the Department of Defense at the Naval Communications Unit in Cutler, Maine.

We clean up hazardous waste sites on Navy and Marine Corps installations using funds from the Defense Environmental Restoration Account. Our fiscal year 1992 funding for cleanup represents a 47 percent increase over fiscal year 1991.

We have also revised our procurement practices to minimize environmental pollution. We have removed or reduced plastic packaging on over 70,000 items in our supply system and we are strictly limiting our inventory of hazardous material. We are also introducing recycled steel grit and plastic beads to remove old paint, instead of using toxic chemical methods.

INFRASTRUCTURE ASHORE

All of our budget priorities are reflected in our shore infrastructure. Our goal is to have quality facilities supporting a quality force.

The Defense Base Closure and Realignment Act of 1990 gives us an opportunity to adjust our shore infrastructure. Reductions in our force structure mean reduced requirements for our shore bases. We have begun a review of our entire shore establishment, aggressively pursuing the base closure and realignment process. We expect to identify several candidate bases in the near future. At those bases, we will take every step possible to alleviate local economic hardship and personal turbulence.

TOTAL QUALITY LEADERSHIP

The Department of the Navy is charting its future along a new path of management innovation and systems integration. We are strategically planning for a more productive organizational structure using the guidelines of Total Quality Leadership (TQL).

TQL provides the conceptual basis for examining everything supported by the department's infrastructure, both shore-based and operational. Through a process of top-down guidance and implementation, TQL translates the present and future needs of the Navy and the Marine Corps directly into working processes. Work procedures, policies, equipment, training, and all organizational factors are worthwhile only when they add value to our ultimate customers, our sailors and marines.

TQL focuses on the enormous power of naval leadership to foster the productive potential of our people, many of whom are stifled by the "red tape" of large bureaucracies. TQL calls for our top leaders to examine the systems supporting their organizations. Our leaders will strive less to control all decisions and enforce policy than they will to help others develop their own decision-making abilities.

Quality leaders lead their people toward even greater capabilities by investing in ongoing training and individual development. In the Navy and Marine Corps, this means our commitment to training and readiness of the operating forces. Our quality personnel will be able to meet the challenges of an unpredictable future.

CONCLUSION

Our international security environment is changing. We face a different complexion of threats throughout the world. There is still the potential for superpower confrontation with the Soviet Union. Our own naval policy and strategy are in an evolutionary stage. We are responding not only to strategic reality, but also to fiscal reality, making real reductions in our defense budget.

The challenge for the Navy and Marine Corps is to meet the defense needs of the Nation in the future as we are doing today in Operation Desert Storm. We will continue our contributions to strategic deterrence, forward presence, and crisis response. We will support a strong infrastructure to reconstitute forces we might need if changes in the Soviet Union require them. Above all, we will take care of our people.

Our American way of life and the guiding direction of the new world order are at stake. The Navy and the Marine Corps must be structured to do whatever is necessary to protect our national interests around the world. Within the context of continued democratic evolution in the Soviet Union, we are committed to change and force reductions, not just for the sake of making defense cuts, but because change makes sense. We will not reduce our capabilities to the point where risk to our Nation's interests becomes unacceptable. We are going about changing our strategy and force structure intelligently, so that we can respond with naval forces wherever necessary. Our Navy and Marine Corps of the future will meet these challenges. Our forces will be sufficient in quality and warfighting capability to fulfill our responsibility to the Nation.

Chairman NUNN. Thank you, Mr. Secretary.

While we have a good attendance, let me just give one administrative notice. We will have a hearing at 2 o'clock this afternoon on a Defense Base Closure Commission appointment, General Duane Cassidy.

We have also been notified that Mr. Will Ball, who most of you know, a former key employee of this committee and a former Secretary of the Navy, is another appointment that has been forwarded. We have not received all of his paperwork, but since we are going to be going in recess Friday it would be my intent, unless there is objection, to go ahead and put both of these on the schedule this afternoon, so we can hear them both, put them on the fast track, and hopefully get five Base Closure nominees approved before the Senate goes out.

Unless there is objection, I would have notice go out to both of them that we would like for them to appear, and we will hope that Mr. Ball's paperwork will allow us to move him through this week, too. Is there any objection to that procedure? Senator Warner.

Senator **Warner**. No. Thank you, Mr. Chairman, for making those arrangements. We want to move along on this.

Chairman **Nunn**. I agree. Secretary Rice.

STATEMENT OF HONORABLE DONALD B. RICE, SECRETARY OF THE AIR FORCE

Mr. **Rice**. Thank you, Mr. Chairman. I will try not to do too elaborate a job of averaging out for General McPeak yesterday, but I appreciate your offer at the opening bell in any event.

Last year, as the committee will remember, we presented the Air Force for the kind of air power and forces we were going to need in the future, and we called it "Global Reach and Global Power."

Global Reach—Global Power

Sustaining the Vision

We are providing you now an update that shows how we have tried to manifest that vision in light of the overall national security that has been presented to you by the Secretary and the Chairman, to manifest that vision in a specific program that of course meets the greatly declining budget constraints that we have now been handed.

Next chart, please.

GLOBAL REACH—GLOBAL POWER
A Strategic Planning Framework

Nuclear Deterrence
- Maintain stable balance with Soviet Union
- Sustain theater nuclear deterrence
- Deter emerging regional nuclear capabilities

Conventional Power Projection/Contingency Forces
- Contain local/limited war and tension; restore the peace
  - Purpose of power projection
  - Emphasis on rapid, mobile, lethal, long-range, flexible
- Hedge against turnaround in risk of global war
- Control of sea, air, and space lines of communication
- Security assistance and complementary force planning with security partners

Just a quick reminder for you. Derived from the overall national security strategy, we get these major categories of military capability that we have to plan for, that are derived directly from the Chairman and the Secretary's statement. I do not need to belabor them for you. You are all familiar with those basic kinds of capabilities.

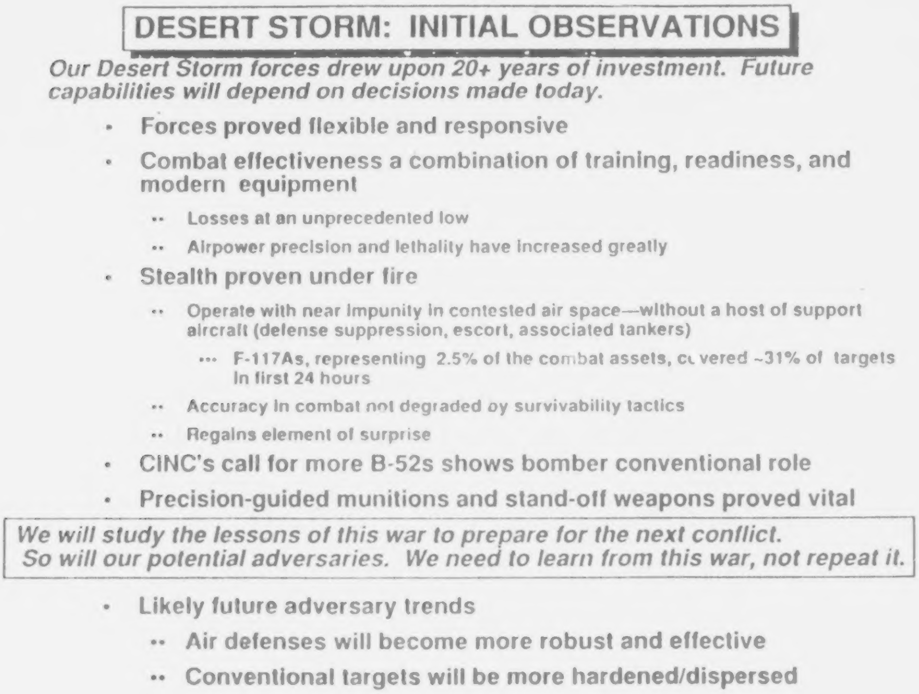
We will go on to how the Air Force tries to do its part.

PLANNING OBJECTIVES

- **Sustain Deterrence—*Nuclear Forces***
- **Provide Versatile Combat Force—*Theater Operations & Power Projection***
- **Supply Rapid Global Mobility—*Airlift and Tankers***
- **Control the High Ground—*Space and C3I Systems***
- **Build U.S. Influence--*Strengthening Security Partners and Relationships***

From those basic capabilities that have to be provided by joint forces, we developed a number of specific planning objectives based on the structure that we showed you last year in the initial

"Global Reach—Global Power" presentations. We will use that structure of objectives to define and describe the Air Force we have planned for the future for you.



DESERT STORM: INITIAL OBSERVATIONS

Our Desert Storm forces drew upon 20+ years of investment. Future capabilities will depend on decisions made today.

- Forces proved flexible and responsive
- Combat effectiveness a combination of training, readiness, and modern equipment
    - Losses at an unprecedented low
    - Airpower precision and lethality have increased greatly
- Stealth proven under fire
    - Operate with near impunity in contested air space—without a host of support aircraft (defense suppression, escort, associated tankers)
        - F-117As, representing 2.5% of the combat assets, covered ~31% of targets in first 24 hours
    - Accuracy in combat not degraded by survivability tactics
    - Regains element of surprise
- CINC's call for more B-52s shows bomber conventional role
- Precision-guided munitions and stand-off weapons proved vital

We will study the lessons of this war to prepare for the next conflict. So will our potential adversaries. We need to learn from this war, not repeat it.

- Likely future adversary trends
    - Air defenses will become more robust and effective
    - Conventional targets will be more hardened/dispersed

A few quick observations from Desert Storm. First, I think we have clearly seen the value of the 20 years of investment that this committee has supported in all of our joint forces; the high quality training and high quality people who have gone along with the investment in top-notch equipment. We have seen all of that in action.

Those forces have proved flexible and responsive when we needed to call on them in a joint context. Combat effectiveness is clearly derived from the training and readiness as well as the equipment.

We have seen stealth proven under fire. The F-117 has operated essentially with impunity in contested air space. It took on during the war, night after night, the hardest targets, the most heavily defended targets. It carried a disproportionate share of the load. Representing only 2.5 percent of the combat assets that were available at the start of the war, it covered 31 percent of the targets in the first 24 hours of the air campaign and then continued to carry a disproportionate share of the target coverage load thereafter.

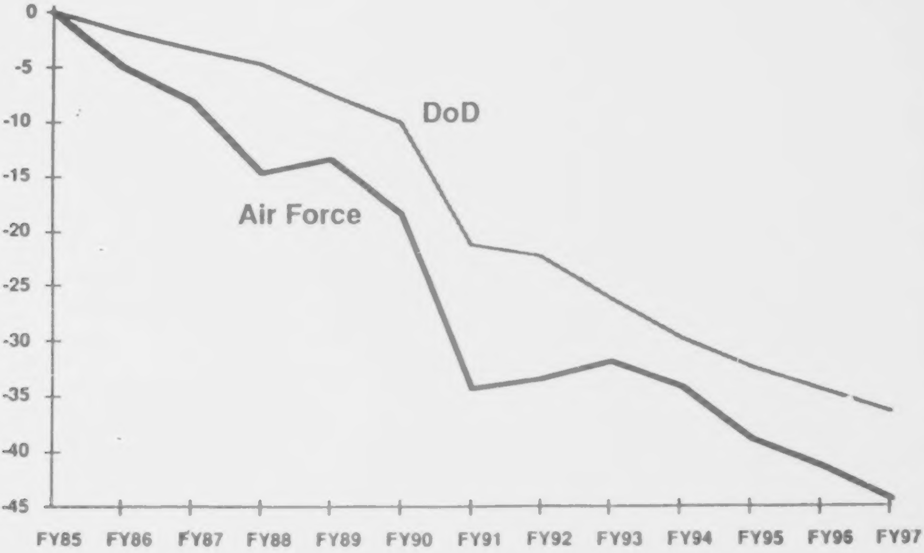
We have seen the use and value of long-range conventional bombers in this war as well. Of course, we have seen precision-guided munitions step into their own and bring us really to a whole new level of effectiveness and capability in air power.

We are going to study the lessons for some time to come from this war, and we do not want to jump too quickly to conclusions from it, though some things are obvious. We need to recognize also our adversaries will be studying this war and learning from it. We need to prepare for the next one, not, certainly, to refight this one.

Next chart.

BUDGET TRENDS

Purchasing Power Cumulative Real Decline ($ FY92)



A quick background on the budget situation. You have seen the top curve here from the Secretary of Defense in his presentation. That is a depiction to what has happened to purchasing power available to the Department of Defense as a whole starting in 1985, which was the peak year for DOD purchasing power during the Reagan buildup. Traced along with it we show you the path of purchasing power available to the Air Force.

We are right here today as a result of the fiscal year 1991 budget action. As you can see, the Air Force is already down 35 percent, coming down substantially faster than the rest of DOD.

The President's budget tries to basically hold that level in real terms, in inflation-adjusted terms, for a couple of years and then put us on a track parallel to the rest of the Department. The end result is the Air Force will be down substantially more in purchasing power than the Department as a whole.

DEVELOPING THE AF BUDGET: GUIDING PRINCIPLES

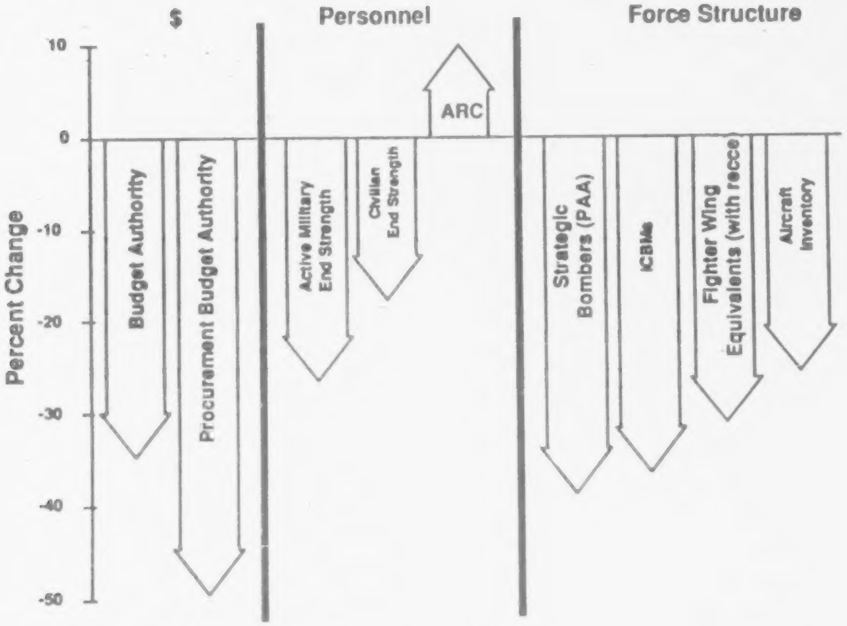
- **Sustain Global Reach—Global Power to underwrite national strategy**
- **Scrutinize programs top to bottom for relevance**
- **Analyze mission areas systematically**
  - To re-examine most important requirements
  - To rethink investment strategies
- **Balance funding to meet CINC's warfighting requirements in major mission areas**
- **Streamline and increase efficiency**
- **Exploit America's aerospace technological edge**

In trying to deal with that declining budget and work out a sensible program within it, we tried to keep a number of important principles in mind. Of course, first, the overall vision and strategy that we are trying to pursue, is embodied in the "Global Reach—Global Power" concepts.

We have been through all of our programs. We have analyzed all of our mission areas, trying to be sure that we provided adequate coverage across all of the CINCs' mission areas that we have to cover. We have tried to balance our funding where we could not meet all of the requirements to ensure we hit the most important ones in each major mission area.

We're doing a great deal in the Air Force to cut back overhead, streamline, make more efficient our operations, so we can keep the tail in some kind of reasonable relationship to the declining teeth of the force structure.

AIR FORCE BUDGET AND PROGRAM TRENDS
Percent Changes, 1985-1995



This chart—by the way, you all have copies of these charts at your place, as some of these are a little hard to read from as far away as you are—summarizes the Air Force's program changes projected over a decade from 1985 to 1995: budget authority and procurement budget authority down by significant percentages, as we have seen. Active military end strength will be down over 25 percent, and civilian end strength down in the teens percentage wise.

The only thing that will be up in the entire Air Force is the strength of the Reserve components from 1985 to 1995; strategic bombers, ICBMs, fighter wings, and overall aircraft inventory, all coming down by significant percentages.

STRATEGIC DETERRENCE

Objective: ***Maintain TRIAD and sustain military sufficiency, flexibility, and stability in post-START force***

- **Bomber force: Flexible, stabilizing**
  - **B-2**
    - **Backbone of future bomber force**
    - **Stealthier operations than F-117 & greater payload/range than B-52 or B-1B—combine for extraordinary versatility**
    - **Only stealthy aircraft fielded in the 1990s**
    - **Supports thrust of arms control**
  - **B-52**
    - **Increase flexibility; decrease force size**
- **ICBMs: Adjust to the new realities**
  - **Begin retirement of MMII**
  - **Validate Rail Garrison basing mode; terminate PK missile buy**
  - **Continue Small ICBM development**

Now I would like to go through each of these four major categories and speak to a few of the highlights in each one of them. I obviously want to hit the B–2 hard here on this chart. It is, of course, going to be the backbone of the future bomber force.

What we are really talking about with the B–2, in all seriousness, is the question of whether we have a viable long-range bomber force well into the next century or not. Its early test results are promising us that we will see a level of stealth in the B–2 that will give it in fact more operational capability than the F–117.

It combines with that a payload and range that is strongly competitive, even better than the B–52 or the B–1—an extraordinarily versatile system. It of course will be the only stealthy aircraft that is available to the Department to field during the 1990s.

BOMBER INVESTMENT* AS % OF DoD BUDGET

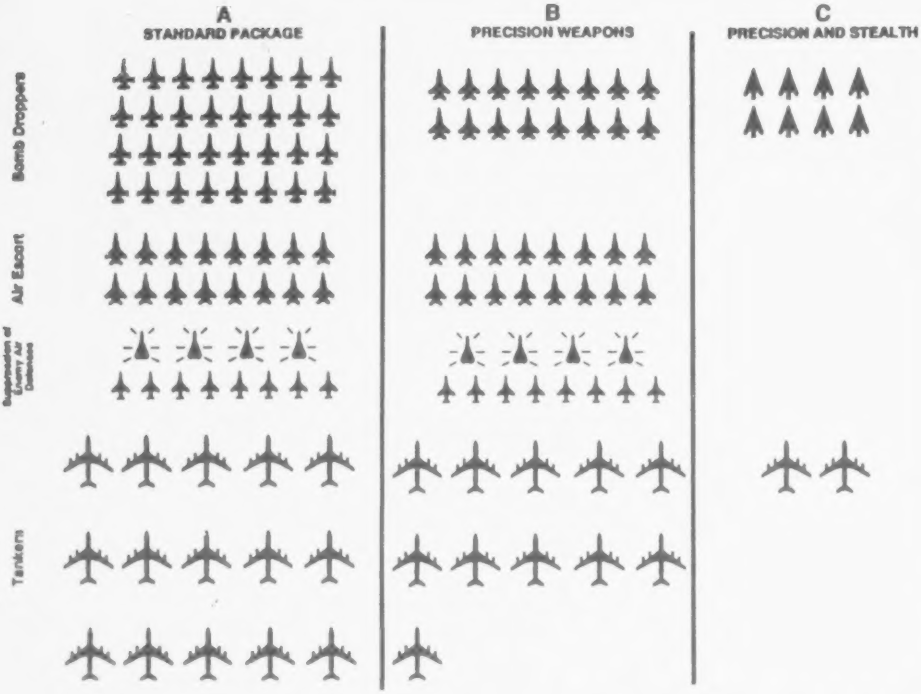
	PEAK FUNDING YEARS								
	1	2	3	4	5	6	7	8	9
B-36	1949 2.3	1.4	1.4	0.7					
B-47	1.5	1951 6.2	3.2	2.0					
B-52	0.7	1.1	0.4	1.2	2.0	1957 3.0	1.6	0.6	1.2
B-1B	1.0	2.0	2.6	1985 2.7	1.8				
B-2	1.4	1992 2.0	1.8	1.7	1.4	1.2	0.9		

* R&D Dollars are included

We understand full well that there are important concerns, serious concerns that we have shared and faced up to in the Department, as to the cost of the B-2. I just want to highlight here the fact that we now have it phased in such a way that it places lower demands percentage wise on the defense budget, in any given year, than any of our previous strategic bomber programs have, some of which were procured in years where the defense budget was in very parlous times and others of which were procured in years where the Defense Department had a lot more resources to go around.

In any of the previous cases, we were devoting higher shares of the defense budget to those strategic bombers than we are planning to do to the B-2.

THE VALUE OF STEALTH



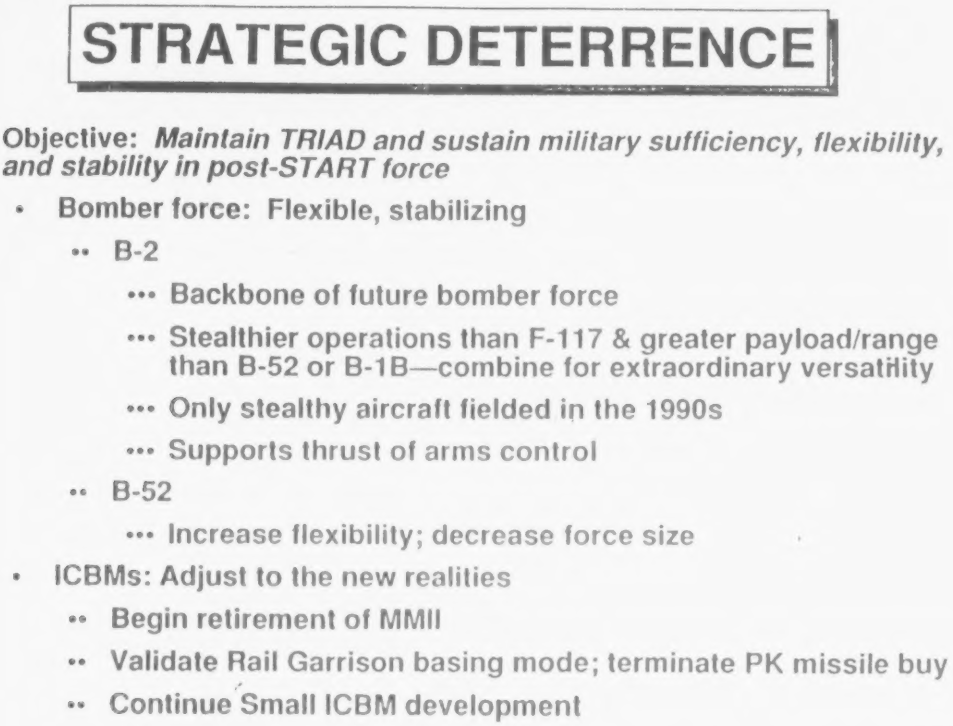
Of course, cost is only one side of the equation. The other issue is value. To try to illustrate that, we put this chart together. The left-hand package, the standard package A it is called there, is an illustration of an actual raid that was flown in the early stages of Desert Storm. These are the attack aircraft up here, smart airplanes carrying ordinary free-fall bombs. These are all the escorts that went along with them: fighters, jammers, Wild Weasels, HARM-shooters, and the tanker force that it took to support that armada in the sky to make that attack on a handful of targets.

Package B shows that if it were to be done with precision weapons there is some advantage. There are fewer airplanes, attack airplanes, that need to be involved, and you have a higher likelihood of actually destroying the target that you have gone after.

If they are non-stealthy platforms, you still need the supporting assets and a large tanker force that is reduced only because the number of airplanes up here are reduced.

The right-hand side shows how that same target set would have been handled using the F–117. It goes by itself. It does an even better job of assuring that the target it goes after is actually destroyed. It requires, of course, a much smaller level of tanker support simply because there are many fewer airplanes involved that have to be supported.

If we were to put the B–2 on that chart, you would see probably two B–2s over on the left, as one cannot quite cover the numbers that we are talking about here. And, we need no tankers, given the bases that were available to operate the heavy bombers from—not the same bases the fighters operated from but from much farther away.



STRATEGIC DETERRENCE

Objective: ***Maintain TRIAD and sustain military sufficiency, flexibility, and stability in post-START force***

- Bomber force: Flexible, stabilizing
  - B-2
    - Backbone of future bomber force
    - Stealthier operations than F-117 & greater payload/range than B-52 or B-1B—combine for extraordinary versatility
    - Only stealthy aircraft fielded in the 1990s
    - Supports thrust of arms control
  - B-52
    - Increase flexibility; decrease force size
- ICBMs: Adjust to the new realities
  - Begin retirement of MMII
  - Validate Rail Garrison basing mode; terminate PK missile buy
  - Continue Small ICBM development

We are, as you know, reducing the size of the B-52 force to bring the bomber force down to the levels that will fit under START. The ICBM force, also has significant adjustments there in light of the new strategic realities and the budget stringency that we face. We are planning to begin retirement of the Minuteman IIs.

We will continue to validate the technical feasibility of the Rail Garrison basing mode, but there are no resources in this budget plan to produce and deploy Peacekeeper Rail Garrison. We do have resources to support the development of the Small ICBM with both options, either the hardened mobile launcher or the mobile case open, or the option to deploy the missile eventually as a single-warhead missile in silos.

That plan keeps open the range of options for the land-based missile leg of the strategic triad under START, however the final details of the START negotiations come out.

THEATER/CONTINGENCY FORCES

Objective: ***Enhance capability to project power—increase lethality and freedom of action***

- **Fighter force structure**
  - **Reduce from 38.5 (including recce) to 26.5 tactical fighter wings (terminate F-16 procurement in FY93)**
  - **Aggressive 15.25/11.25 active/ARC mix**
  - **Embedded recce forces**

Fighter Force Sizing (Tactical Fighter Wings)

	AC/ARC
Forward presence in the 1990s	~7.0/0.0
Desert Storm	10.1/0.9
	17.1/0.9

Turning to theater contingency forces, our projection portion, let us focus here a moment on the Air Force's part of the joint forces capabilities for firepower projection. For the fighter force structure, I would like to try to get a little more specific number in your minds than you have seen in other charts.

The 26.5 tactical fighter wings that we are planning to go down to includes the recce force capability within it. The recce numbers have not historically been included in the count of tactical fighter wing equivalents.

Chairman NUNN. What number?

Mr. RICE. I am sorry. The reconnaissance forces, the dedicated or dual role reconnaissance forces. They have been the RF force up until now.

The 26.5 wing force includes the reconnaissance capability. The previous numbers did not. If we adjust the previous numbers so we have apples and apples, we are really at 38.5 wings currently, headed down to 26.5 wings, an even steeper reduction than I think some of the numbers you have seen.

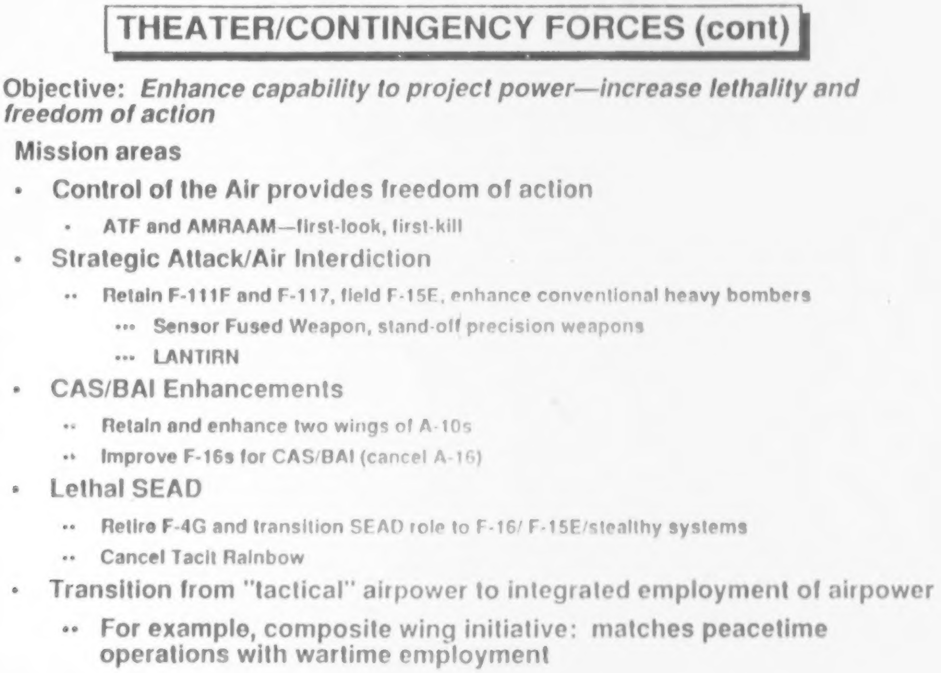
We will be headed for a very aggressive ratio, a lower active to ARC ratio than the Air Force has operated at in any recent times, probably in any times—15.25 to 11.25 within the 26.5. As I said, the recce forces will be embedded.

One way of thinking about what we have done to the size of the force is to project forward to what we expect to be the forward presence required, the greatly reduced forward presence required of air forces in the future in Europe and Asia. We have had historically 12.5 wings deployed forward. This assumes we would end up with about seven wings deployed forward. That includes Alaska, by the way.

Then if we were to deploy the size of forces that were actually used, deployed to Desert Storm, a total of about 11 wings, which were about 10 Active and 1 Guard and Reserve in this recent encounter, as you can see we would require more active wings to do that than we will have.

That is a way of simply pointing out that we will be more dependent earlier on the Guard and Reserve in the future with this force structure than we were in the case of Desert Storm.

Next chart.



THEATER/CONTINGENCY FORCES (cont)

Objective: *Enhance capability to project power—increase lethality and freedom of action*

Mission areas

- Control of the Air provides freedom of action
  - ATF and AMRAAM—first-look, first-kill
- Strategic Attack/Air Interdiction
  - Retain F-111F and F-117, field F-15E, enhance conventional heavy bombers
    - Sensor Fused Weapon, stand-off precision weapons
    - LANTIRN
- CAS/BAI Enhancements
  - Retain and enhance two wings of A-10s
  - Improve F-16s for CAS/BAI (cancel A-16)
- Lethal SEAD
  - Retire F-4G and transition SEAD role to F-16/ F-15E/stealthy systems
  - Cancel Tacit Rainbow
- Transition from "tactical" airpower to integrated employment of airpower
  - For example, composite wing initiative: matches peacetime operations with wartime employment

Quickly covering some of the mission areas within theater contingency forces, we have seen in Desert Storm quite clearly the importance of the ability to capture control of the air and hold it. The Advanced Tactical Fighter and the AMRAAM missile are the key to being sure we maintain that capability well into the next century.

In the interdiction forces, we will be retiring all the F-111s except the F-111Fs. They're the ones that you have seen in action on your TV screens, that have the precision delivery capability. Of course, we will field the F-117 and field the F-15E, which is already funded, and we will enhance the capabilities of our conventional heavy bombers, particularly the capabilities on the B-2. Significant capabilities are already incorporated into the B-2 program, and we will look at putting even more in.

We will make sure that the B-52Hs, which we will be retaining under START, will also have considerable conventional capabilities.

Senator EXON. Mr. Secretary, what are the numbers of that F-111F? How many?

Mr. RICE. We will be able to maintain about 60 PAA, somewhat less than a full attack fighter wing equivalent. And for the F-117, we can field the 42 PAA, actual operational aircraft that you have seen deployed in Desert Storm.

Of the F-15Es, we will have essentially two full wings at the start. As we incur attrition over time, that number will degrade some, as the F-111s have.

We are pursuing modern weapons, standoff weapons, sensor-fused weapons, other precision weapons, and of course deploying the LANTIRN capability.

The Air Force continues its strong support of the close air support mission. Under these greatly reduced budgets, we have a significantly revised plan in what we are headed for. We will retain two wings of A-10s, one active and one in the Reserve components. We will improve about 300 F-16s to a kind of F/A-16 mode to significantly enhance their capabilities for close air support and battlefield air interdiction.

We have seen the importance of the capability to suppress enemy air defenses—that is what SEAD is—lethally, and yet we are facing the need, for economic reasons, to retire the F-4Gs, a very old and expensive aircraft to operate. We will be transitioning that SEAD role to the F-16 and the F-15E with some new capabilities that we have under development. All of that has allowed us also to be able to cancel the Tacit Rainbow program.

We have seen in Desert Storm the critical importance of using air power the right way, the integrated employment of air power, not simply the disparate use of different air assets. We are going to be working, not just in terms of how we plan and equip the force, but how we organize and train the force in peacetime, to enhance the Air Force's ability to contribute to the integrated deployment of air power.

One of the initiatives we are working on now under General McPeak's leadership is the notion of composite wings, and we will have a couple of them underway hopefully within the year.

MOBILITY/REACH

Objective: *Enhance rapid response and service interoperability capabilities*

- C-17
  - Flexibility vital in unpredictable environment (Just Cause/ Desert Shield/Desert Storm)
  - Program progressing, remains clearly the best/most cost-effective solution to our airlift needs
- C-130H procured to modernize tactical airlift—proved essential in DS/DS
  - Make up for C-17 intra-theater contribution eliminated by MAR and replace aging C-130Es
  - Off the shelf capability—no development cost
- Tanker multipoint initiative
  - Add drogue pods to KC-135Rs and probes to F-15/16
  - Enhances efficiency, flexibility, and interoperability

C-17 VERSATILITY

> *"The C-17 offered the most capability at least cost in every case."*
>
> SECDEF Cheney to Congress on the range of MAR scenarios

- In an airfield constrained environment (Panama, 12/89), C-17 would allow deployment of a JUST CAUSE-sized force in just over half the time
- Even in a relatively unconstrained airfield environment (DESERT SHIELD), C-17 could deliver significantly more power
  - e.g., 12 more fighter squadrons and 2 more brigades in first 12 days
- DESERT STORM urgent requirement to airlift several hundred HEMTTs illustrates importance of outsize airlift capability

> *"We may not always have the luxury of 161 days to position our forces"*
>
> *VADM Butcher, DCINCTRANS*

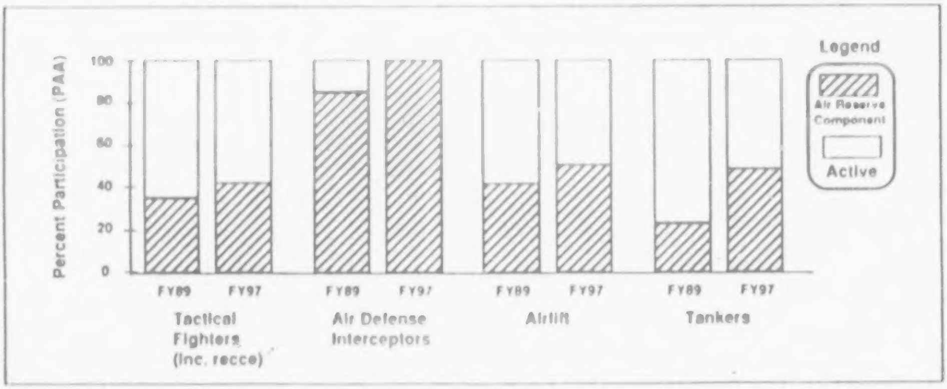
Turning to the mobility, global reach part of our objectives, we have of course seen in Desert Shield and Desert Storm the value and importance of all of that. The C–17 is our key modernization program to ensure that we continue to support and even enhance that capability. It is the right design, the right aircraft, for not just a Desert Shield-Desert Storm kind of scenario, but for a wide variety of scenarios that we might find in the future to support deployment of our sister services, of course, as well as the Air Force.

We have stepped up in this budget, despite the much tighter budgets we are dealing with, to a modernization program for our tactical airlifters. We have provided for each year in the 6-year program a purchase of C-130Hs for the Active component of the force. That has been provided for.

We also have an initiative to enhance the tanker force. We will keep enough tankers to ensure that, with the KC-135R mods, we will stabilize the offload capability. This initiative will allow us to significantly increase the flexibility and the interoperability, and support the Navy and the allies as well as the Air Force.

AIR RESERVE FORCE PARTICIPATION
IN KEY MISSION AREAS

- Drawdown primarily from Active; sustain Air Reserve Component strength
- Retain all ARC flags
- Extensive modernization of ARC forces
- Heavier reliance on ARC in most major mission areas



I made a reference or two to the Reserve component. I think this is a major success story in the Air Force. The performance of our Guard and Reserve units in Desert Shield and Desert Storm was nothing short of outstanding all across the board.

We are taking the drawdown in this future Air Force entirely from the Active. We are essentially sustaining the strength of the Reserve components at about where they are today. We are retaining all of the ARC unit flags. Some of them are changing out the type of equipment that they operate.

We are carrying out an extensive modernization of the Reserve components, particularly in the fighter forces, but also in some of the airlift and tanker forces.

The result of all of that, since we are drawing down the Active and sustaining the Reserve component, is that we will end up with a higher proportionate reliance on the Reserve components in every major mission area that they operate in.

SPACE/C3I

Objective: ***Balance funding to meet range of critical requirements***

- **Communications**
  - **Restructured MILSTAR program in accordance with Congressional guidance**
    - **Increase tactical orientation, decrease cost**
- **Warning**
  - **BSTS terminated**
  - **DSP sustained; technology pursued for possible follow-on**
  - **OTH-B mothballed**
- **Surveillance**
  - **JOINT STARS proven in combat**
  - **Adjust Space-Based Wide Area Surveillance (SBWAS) to technology development program**
- **Navigation**
  - **GPS constellation complete in FY93**
- **Advanced launch development**

Space integrated into the battlefield in Desert Shield/Desert Storm

The fourth major category of planning our forces is the securing and enhancing the high ground, control of the high ground, space, C^3I. Here again, we have had to balance our reduced funding across a range of critical requirements.

In the communications area, we have significantly restructured the MILSTAR program, again I think in direct response to guidance from this committee and your counterpart committees. We have increased its tactical orientation, and decreased the overall cost of the program in ways that we think make it more cost effective. We hope you will agree with that.

Chairman NUNN. Mr. Secretary, on that one, do you think that was sound guidance, looking back on it? I know that is hard for anybody in the executive branch to ever admit.

Senator EXON. On the advice of counsel—[Laughter.]

Mr. RICE. Mr. Chairman, I would respond to you this way. I think we have a strong and cost effective MILSTAR program that has emerged from the review, the scrub of the program that was done as a result of that guidance. If we had our druthers and we had enough money to go around, we would obviously prefer to go back to the more robust, full up program, perhaps with some—perhaps still incorporating some of the changes or some of the nuclear survivability and other things of that sort, where more of them were necessary.

The shift to tactical orientation is certainly an appropriate one, shifting more of the weight in that direction, in light of the more likely scenarios in which it will be used in the future.

Chairman NUNN. I take that as a "probably yes" answer.

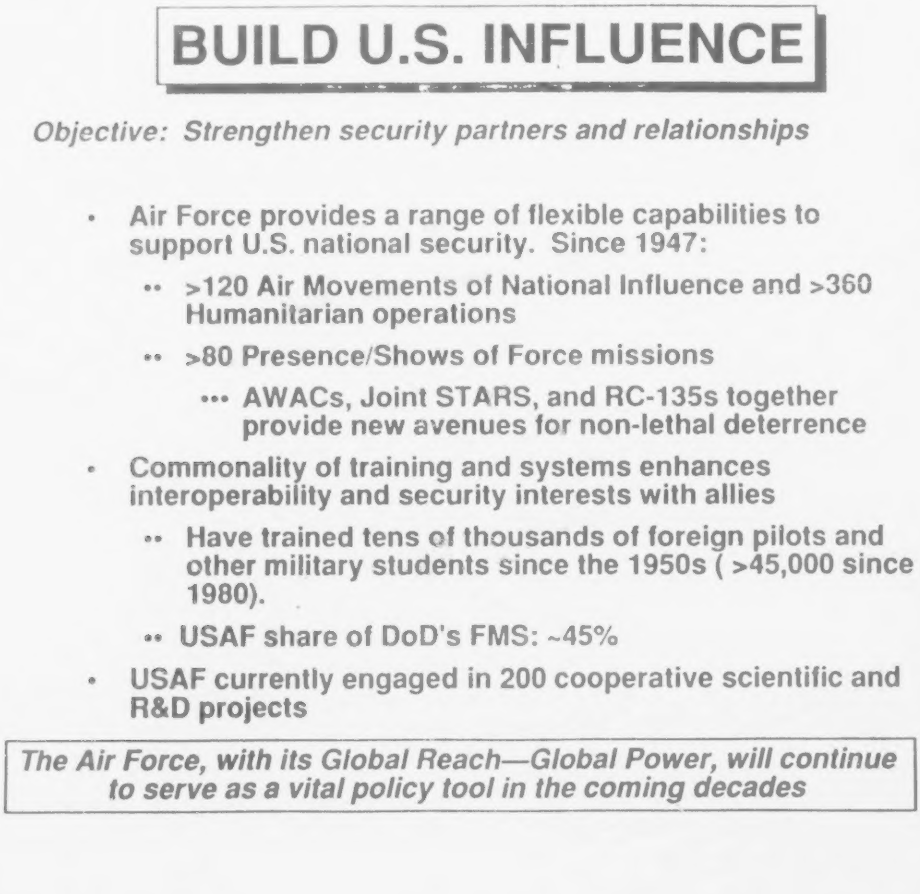
Mr. RICE. I believe you can interpret it whichever way you want. [Laughter.]

In the warning area, we have terminated the BSTS program. It is simply not affordable in this environment. We are sustaining the DSP satellites, and we have some funds laid in for pursuing technology for a possible follow-on, and this is an area we are continuing to work on within the Department and feel that we owe some further material to the committees on how we plan to proceed with an advanced warning system of some kind to enhance our capabilities there.

We plan to mothball the OTH–B radars and not proceed to deploy the additional ones that had been planned.

In the surveillance area, the JSTARS has performed magnificently, even though it was a system actually in a development mode, in Desert Storm. We have, of course, provided funding in the program to finish the development and to deploy the JSTARS system.

We have basically stood down any expectation under these budget conditions that we could pursue a space-based wide area surveillance system program in anything like the near-term. We put that back to a technology effort.



BUILD U.S. INFLUENCE

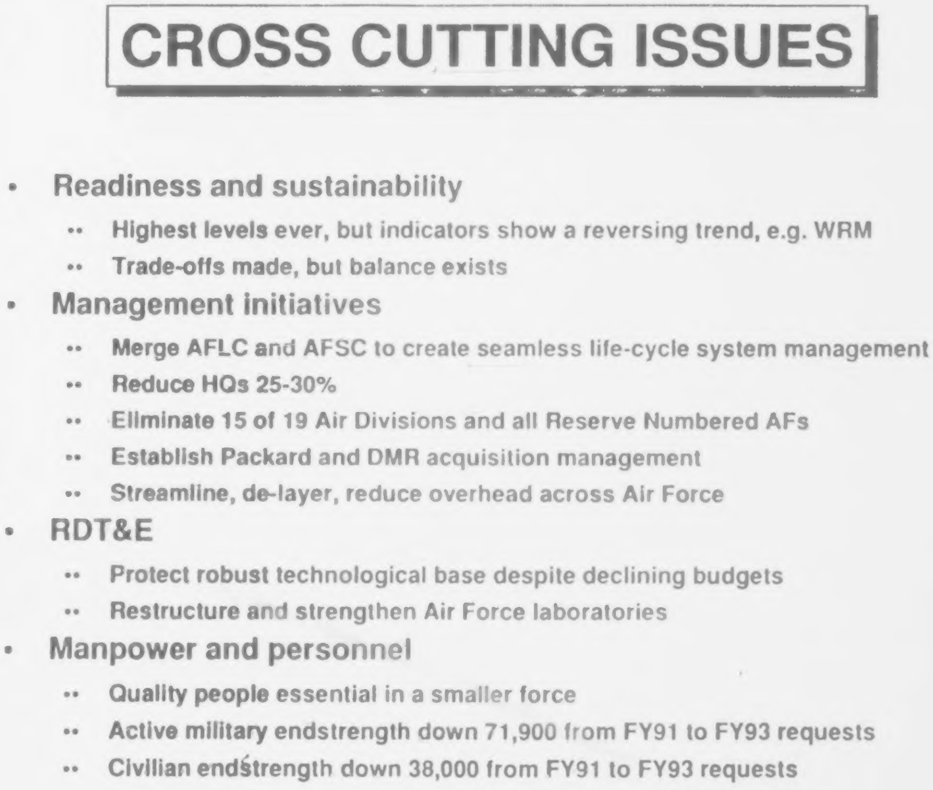
Objective: Strengthen security partners and relationships

- Air Force provides a range of flexible capabilities to support U.S. national security. Since 1947:
  - >120 Air Movements of National Influence and >360 Humanitarian operations
  - >80 Presence/Shows of Force missions
    - AWACs, Joint STARS, and RC-135s together provide new avenues for non-lethal deterrence
- Commonality of training and systems enhances interoperability and security interests with allies
  - Have trained tens of thousands of foreign pilots and other military students since the 1950s (>45,000 since 1980).
  - USAF share of DoD's FMS: ~45%
- USAF currently engaged in 200 cooperative scientific and R&D projects

The Air Force, with its Global Reach—Global Power, will continue to serve as a vital policy tool in the coming decades

It is perhaps worth noting as we change charts here that we have just seen the first war in which space assets made a truly significant contribution, and we will of course attempt to enhance our capabilities to contribute to operations on terra firma and in the air from our space assets in the future.

We also do a great deal in the Air Force to build our long-term relationships with allies and security partners around the world. We have provided you with some material on that, which we don't need to take your time to review today.



CROSS CUTTING ISSUES

- Readiness and sustainability
  - Highest levels ever, but indicators show a reversing trend, e.g. WRM
  - Trade-offs made, but balance exists
- Management initiatives
  - Merge AFLC and AFSC to create seamless life-cycle system management
  - Reduce HQs 25-30%
  - Eliminate 15 of 19 Air Divisions and all Reserve Numbered AFs
  - Establish Packard and DMR acquisition management
  - Streamline, de-layer, reduce overhead across Air Force
- RDT&E
  - Protect robust technological base despite declining budgets
  - Restructure and strengthen Air Force laboratories
- Manpower and personnel
  - Quality people essential in a smaller force
  - Active military endstrength down 71,900 from FY91 to FY93 requests
  - Civilian endstrength down 38,000 from FY91 to FY93 requests

There are a number of cross-cutting issues in the process of putting together any kind of a program that had to be tended to. Readiness and sustainability of course is the key one. We have seen it at the highest levels in history for Air Force operations in Desert Storm. Our Air Force units on average all across the board ended the war with a 94 percent plus mission capable rate, higher than we actually expect them to maintain in normal peacetime training situations.

We have made some tradeoffs as we look out into the future, but we hope we have quite a good balance in the out year program. That is an area we are going to keep a very careful eye on as we go year to year to make sure we do not let those capabilities slip, the readiness numbers slip.

We are pursuing a large number of management initiatives. We provided the committees on February 4 with a separate letter that detailed a number of these initiatives. I again won't take your time to brief you on them now. I hope you will agree that we are pursuing a lot of worthwhile efforts to make sure we end up with a leaner, meaner Air Force in the future, one that keeps its tooth-to-tail ratio in good shape.

We have protected a strong RDT&E base, and we believe we have tended to key aspects of our personnel programs to make sure we can attract and retain the high quality people we have in the Air Force today as we continue out into the future.

SUMMARY

- **Desert Shield/Desert Storm has illustrated importance of airpower to underwrite U.S. national security**
- **Global Reach—Global Power outlined AF's strategic planning framework**
- **FY92 budget sustains that vision with greatly reduced resources**

Objective: Smaller force with cutting edge capabilities and top quality people

In summary, Mr. Chairman, we believe we have been able to put together, even under these significantly reduced budgets, a balanced program that tends to the most important requirements of all of the warfighting CINCs that the Air Force is responsible for supporting, and at the same time, to sustain the vision of "Global Reach—Global Power," the capabilities that offers the country for the future.

We expect to end up with an Air Force that is certainly smaller than any we have seen in post-World War II times, but one where we believe we can, with the support of the committee for funding levels and our modernization programs, ensure that it ends up being one that is of the same cutting edge capability and retains the same high quality people as the Air Force that you have seen in operation in Desert Storm.

[The prepared statement of Mr. Rice follows:]

PREPARED STATEMENT BY HON. DONALD B. RICE, SECRETARY OF THE AIR FORCE

FISCAL YEAR 1992 AIR FORCE POSTURE

At the time this statement was drafted, our forces were beginning the return home following the extraordinarily successful conclusion of Operation Desert Storm. U.S. forces, in conjunction with forces from allied nations, have achieved a stunning victory. These Desert Storm forces—from all the services—have drawn upon over 20 years of investment to provide the Nation with the kinds of responsive and flexible capabilities needed to underwrite U.S. national security. Future capabilities will depend, in turn, upon choices made today.

While we share the Nation's pride in all the forces, the events of the past few months have demonstrated to the Nation the importance of airpower in modern conflict. In Operation Desert Shield/Storm, our air forces have proven flexible and responsive—their combat effectiveness the result of a combination of training, readiness, and modern equipment. Stealth, perhaps the most revolutionary set of technologies since the advent of radar and the atomic bomb, has been proven under fire. F-117A aircraft have operated with impunity in contested air space, without the host of support aircraft (air escort, defense suppression, and associated tankers) required by more conventional airframes. For example, F-117As, representing 2.5 percent of the combat assets, covered approximately 31 percent of the targets in the Air Tasking Order for the first 24 hours of the air campaign. Precision-guided munitions and stand-off weapons have also proven their merit in destroying critical elements of Iraq's war machine. And General Schwarzkopf's call for more B-52s has illustrated the continuing importance and utility of conventional heavy bombers.

We will carefully study the lessons of this war to prepare for the next conflict. So will our potential adversaries. For example, the Soviets have already formed groups to study "lessons learned" from Operation Desert Storm. In the future, enemy air defenses will likely become more robust and effective; conventional targets more hardened and dispersed. We need to be prepared for the future—to learn from this war, not just plan to repeat it.

GLOBAL REACH—GLOBAL POWER

During hearings held at the same time last year, the Air Force laid out its strategic planning framework for the future. Entitled *Global Reach—Global Power*, this framework capitalizes upon the inherent characteristics of airpower—speed, range, flexibility, precision, and lethality—to help underwrite U.S. national security. Operation Desert Shield/Storm has shown this global reach and global power in action. In its planning for fiscal years 1992/93, the Air Force followed the *Global Reach—Global Power* framework in applying resources. The President's fiscal years 1992/93 budget sustains this vision to support U.S. national security for the long term.

Extraordinary international developments over the last few years have created the potential for a significantly different security environment as we approach the beginning of the 21st century. These changes do not promise a tranquil world nor an end to threats to American interests around the globe. Soviet policy declarations reflect changes in Soviet intentions, but the ultimate direction of the Soviet Union is far from clear. Many developing nations possess formidable arsenals of growing sophistication, which, as demonstrated recently by events in the Arabian peninsula, can threaten U.S. interests and allies.

In the face of these uncertainties, the fundamental U.S. national security objective remains the preservation of the United States as a free and independent nation. The foundation of our defense strategy is deterrence—deterrence based on a mix of nuclear and conventional forces, strong allies, forward defense, aerospace and maritime superiority, and power projection capabilities. We must continue to deter a Soviet nuclear attack and stabilize the nuclear balance through arms control coupled with prudent modernization. For conventional forces, the focus has shifted to regional contingencies. To contain local and limited wars, we must improve our capabilities to project power—the United States must increasingly emphasize rapid, mobile, and lethal long-range capabilities.

This new world we are rapidly moving into plays to Air Force strengths—rapid, deployable, long-range, flexible, and lethal capabilities, which can deter, provide a tailored response, or punch hard when required. The *Global Reach—Global Power* framework lays out five main objectives and associated forces for the Air Force to deal with this uncertain world:

— *SUSTAIN DETERRENCE*—Nuclear Forces

— *PROVIDE VERSATILE COMBAT FORCE*—Theater Operations and Power Projection

— *SUPPLY RAPID GLOBAL MOBILITY*—Airlift and Tankers

— *CONTROL THE HIGH GROUND*—Space and C3I Systems

— *BUILD U.S. INFLUENCE*—Strengthening Security Partners and Relationships

The process of developing plans to support these objectives was conducted within the constraints of downward trends in defense spending. Continuing concern over the Federal deficit has made tighter defense budgets a way of life, forcing the Air Force to make many difficult decisions to provide the full range of capabilities needed in the challenging future. Figure 1 provides a dramatic illustration of the challenge facing the Air Force in the 1990s. By fiscal year 1997, our purchasing power will have declined 45 percent from the peak funding year of fiscal year 1985.

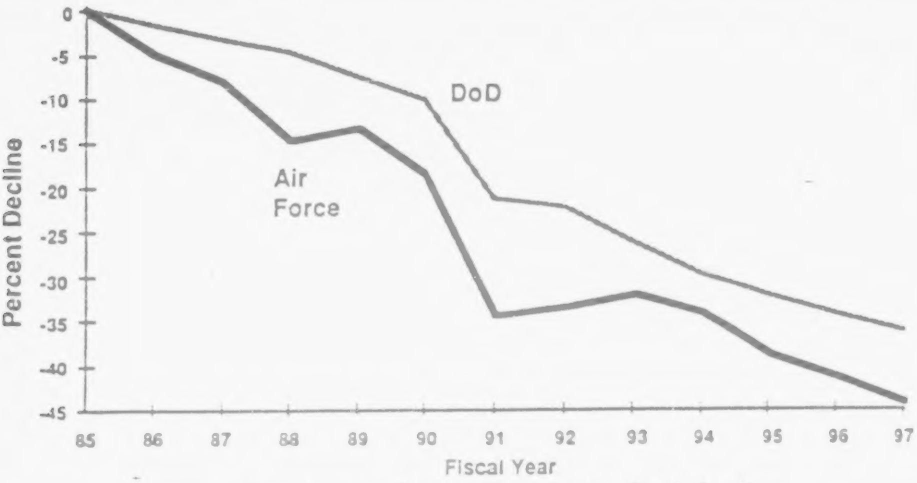


Figure 1—Purchasing Power Cumulative Real Decline (in FY92 Constant Dollars)

After several years of dramatic decline, the Air Force's fiscal year 1992 budget request for $86.8 billion in total obligational authority (31.1 percent of the total DOD request) provides a modest real growth over fiscal year 1991 of 0.8 percent. The biennial budget also requests $91.7 billion for fiscal year 1993, a 1.7 percent real growth over fiscal year 1992. These modest increases reflect the need to capitalize upon long-planned investments in order to modernize and retain capabilities in essential mission areas. In subsequent years, Air Force plans respond to continuing downward projections in defense budgets.

To develop the fiscal years 1992/93 budget, every program was scrutinized from top to bottom for relevance. We analyzed each mission area systematically to re-examine our most important requirements and rethink investment strategies. The results exploit America's aerospace technological edge to ensure maximum combat capabilities for the long term. At the same time, we have ruthlessly pursued efficiency to get the most combat power out of tax payers' dollars.

The Air Force has deliberately chosen to sacrifice size while continuing modernization and preserving readiness—to provide a smaller, but balanced, ready, modern, and sustainable warfighting force. The dramatic reductions are illustrated in Figure 2. The Air Force is reducing active and civilian end-strength and increasing reliance on the Air Reserve component to the maximum extent possible. We are also substantially cutting our bomber, ICBM, and fighter force structure. To sustain the combat effectiveness of this smaller force and position ourselves for the long-term challenge, we will continue to pursue the most vital modernization programs.

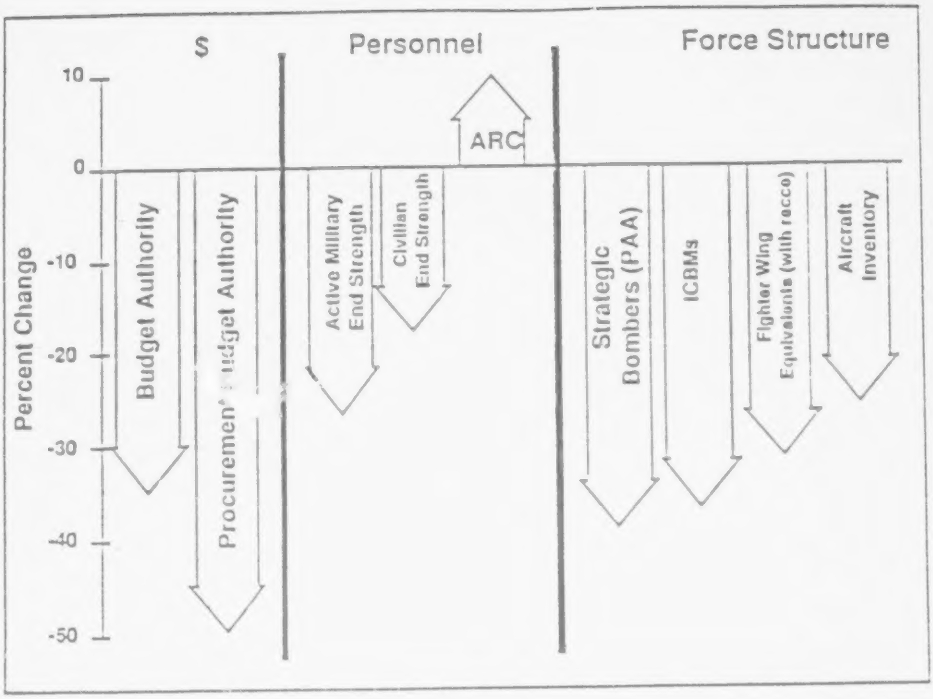


Figure 2—Air Force Budget and Program Trends,
Percent Changes, 1985-95

SUSTAIN DETERRENCE—NUCLEAR FORCES

Deterrence of nuclear attack is the cornerstone of U.S. national security. The Soviet Union remains the only nation capable of destroying the United States, and for the foreseeable future the Soviets will retain the capability to deliver thousands of nuclear warheads against our Nation. The Triad concept remains fundamental. Each leg of the Triad possesses unique and complementary characteristics which synergistically provide a retaliatory capability that no adversary could hope to successfully overcome. Air Force objectives in sustaining strategic deterrence are to maintain military sufficiency, flexibility, and stability in the post-START force. We continue scaled-back plans to modernize the two legs of the Triad provided by the USAF: bombers and ICBMs.

The Bomber Force

The USAF's commitment to maintaining a viable long-range bomber force is rooted in the historical experience of long-range bomber development and operations, the bomber's indispensable role in supporting nuclear deterrence, and the unique versatility that makes it a particularly effective weapon for conventional operations and the projection of U.S. power.

The rapid changes to the global security environment have added unprecedented uncertainty to our security planning, increasing the importance of flexibility and adaptability. As we have seen in Operation Desert Storm, when the theater commander needed increased firepower, he called for additional heavy bombers. Understanding the versatility of heavy bombers—in both nuclear and conventional operations—is the key to understanding their utility. The Air Force remains committed to ensuring the long-term viability of the bomber force.

In the nuclear arena, the bomber enhances the stability of the nuclear balance. Its high survivability promises any aggressor that an attack will be met with devastating retaliation, while its relatively slow speed compared to ballistic missiles means that the bomber does not pose a credible first strike threat. Because it can be generated, dispersed, launched under positive control, and then recalled or redirected, the bomber also provides our Nation's leaders with a highly flexible means of sending a variety of unmistakable messages to an adversary—messages that can help defuse and stabilize crises.

The United States currently fields two major types of heavy bombers—penetrating bombers and stand-off cruise missile carriers. A balanced combination of penetrating bombers and cruise missile carriers enhances deterrence by complicating the enemy defensive problem and adding targeting flexibility. Cruise missiles have proven to be a valuable complement to the penetrating bomber force; they extend the lives of older bombers no longer capable of penetrating effectively, add mass to the bomber attack by saturating defenses, and are excellent weapons against many fixed targets. The manned penetrating bomber is an extremely efficient, flexible, and effective system. The key to the penetrating bomber's warfighting versatility and efficient weapons delivery is the presence of a crew in the cockpit capable of reacting to situations and making decisions.

Moving to a pure cruise missile force would eliminate the advantages provided by penetrating bombers and introduce new vulnerabilities. Using long-range radars, airborne radar platforms, tankers, and fighters, Soviet air defenses could focus on detecting, tracking, and engaging non-stealthy cruise missile carriers before they could launch their missiles. Such an approach would not work against a stealthy penetrating bomber. The USAF's highest priority is the acquisition of 75 B-2 bombers, the only stealth aircraft planned for fielding in the 1990s.

The advantages provided by stealth have been proven under fire. Stealthy aircraft can penetrate defenses without the range of support assets required by non-stealth airframes—stealth provides more combat capability from a smaller number of assets with less risk to personnel. Stealth also aids in accurate delivery of munitions in combat—the accuracy of stealthy aircraft is not degraded by survivability tactics, such as jinking. Figure 3 provides a notional illustration of why a small percentage of the allied combat aircraft—F-117A force—was able to cover a large proportion of the target base during Operation Desert Storm's strategic air campaign.

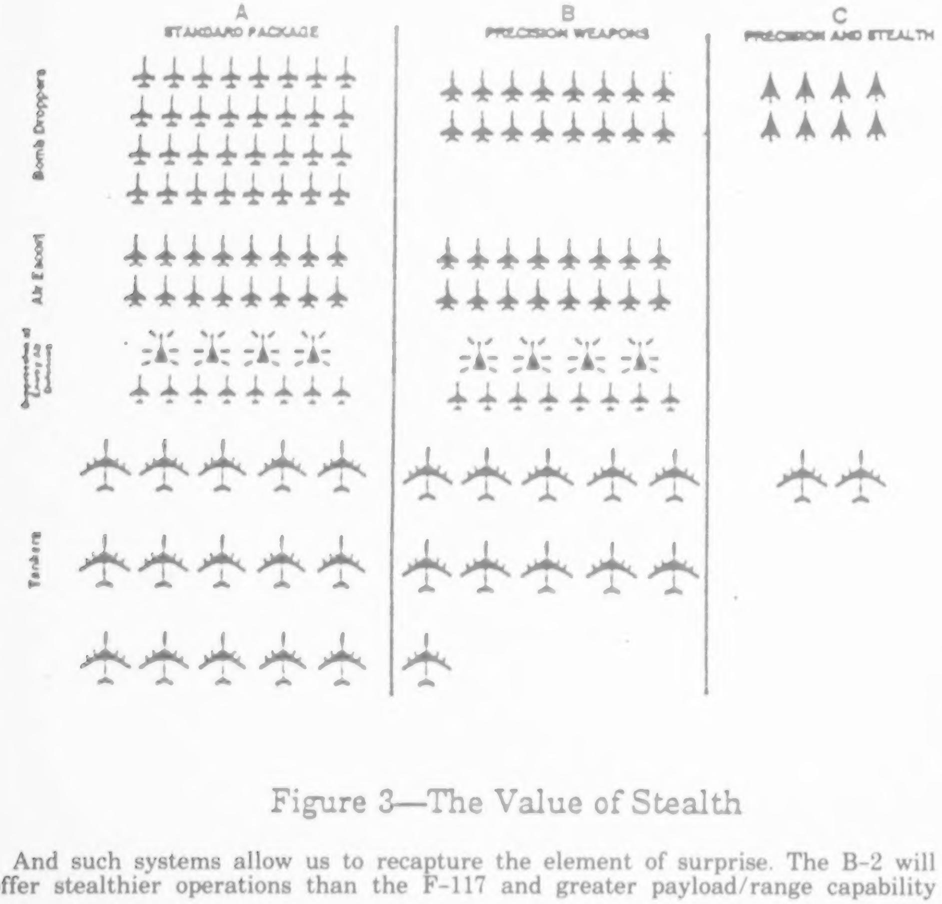


Figure 3—The Value of Stealth

And such systems allow us to recapture the element of surprise. The B-2 will offer stealthier operations than the F-117 and greater payload/range capability

than the B-52 or B-1B—the aircraft will provide extraordinary versatility in supporting nuclear deterrence and enhancing our conventional warfighting capabilities. And that is the kind of flexibility we need in our future smaller force structure.

Based on the need to balance reductions across all accounts and stabilize annual B-2 funding within a constrained resource environment, the budget limits annual B-2 investment (procurement and RDT&E) to approximately $5 billion. Peak year funding for the B-2 is lower than any bomber in modern U.S. aviation history—ranging from the B-36 up to the B-1. Some of these bombers were procured in relatively parlous times, but room was found for them within the agreed-on budget constraints, just as we have found room for the B-2. This budget funds four aircraft in fiscal year 1992 and seven aircraft in fiscal year 1993.

With the B-2 as the backbone of our bomber force, we will continue to upgrade the B-1B fleet and elements of the B-52 force. A defensive avionics recovery plan has been developed for the B-1B. And over the next few months, we will complete follow-on operational test and evaluation for conventional bombing certification of that aircraft. Budgetary pressures require us to accelerate retirement of the B-52G cruise missile carriers, although two squadrons of dedicated conventional B-52Gs will be retained. The B-52H force will transition to a pure cruise missile force, armed with both the Air Launched Cruise Missile (ALCM) and the stealthy Advanced Cruise Missile (ACM). Approximately half of the B-52H force will be upgraded to also support conventional operations, thus increasing their versatility to meet the demands of this uncertain world environment.

ICBMs

ICBMs make unique contributions to the Triad. They are valued for their promptness, reliability, accuracy, low operating cost, connectivity, and availability—while their near 100 percent alert rate allows the other two legs of the Triad to operate at more economical tempos.

Soviet advancements in ICBM accuracy and increased MIRVing led to increasing concern over the survivability of our silo-based ICBM force and the potential for crisis instability. Adding mobility was deemed to be the best method of addressing these problems, which in turn led to the development of the Peacekeeper Rail Garrison (PRG) program, where Peacekeeper missiles would be mounted on trains, and the Small ICBM (SICBM) program, where single warhead missiles would be mounted on Hard Mobile Launchers (HMLs).

Our adjusted ICBM modernization plans reflect the new realities of the post-Cold War era. Mobility comes at a high cost to procure and operate. And potential future arms control talks beyond START are increasingly focusing on reducing or eliminating heavily MIRVed landbased systems such as Peacekeeper and the Soviet SS-18.

These factors have led to a re-evaluation of our missile modernization plans. We intend to validate the PRG basing mode, but will pause deployment awaiting future developments. Future Peacekeeper missile buys will be terminated. The SICBM program will continue in development—the choice of a silo or mobile basing mode can be made when directions in the strategic balance become clearer. Whether mobile or in silos, the single warhead SICBM will be more stabilizing during periods of crisis than heavily MIRVed ballistic missiles.

Given anticipated START constraints on Soviet ICBMs, reductions in the threat to our missile silos allow longer-term reliance on the Minuteman missile force. Over the next few years we will begin retiring MMIIs. The MMIII force will be retained and their silos upgraded with new computers and launch control facilities. Depending on START outcomes, we will retain the option to download MMIII to a one warhead configuration in the future.

PROVIDE VERSATILE COMBAT FORCES—THEATER OPERATIONS AND POWER PROTECTION

In contrast to fairly stable nuclear deterrent objectives, the focus on regional contingencies will cause more fundamental changes in conventional forces. Our plans for USAF theater/contingency forces will improve our capabilities to project power—to increase lethality and enhance freedom of action. The ability to concentrate force in a responsive manner over great distances is a key attribute of the Air Force. During Operation Desert Shield, for example, an F-15 squadron was in place, ready to fight 7,500 miles from its home base, within 38 hours of the deployment order. Five fighter squadrons and a contingent of AWACS aircraft were in place within 4 days of the order to deploy. The Air Force's ability to project power, as well as readily adapt to changing circumstances and environments, will be increasingly important in the future.

Operation Desert Storm has highlighted the importance of training, readiness, and advanced equipment. Together they have provided a potent warfighting capability—with aircrews ready to do the job right the first time out, and with historically low casualty rates. To continue providing a modern, balanced, and effective fighter force within realistic budget constraints, we plan to significantly reduce our fighter force structure—from 38.5 tactical fighter wings (including reconnaissance assets) to 26.5 wings. This smaller force requires fewer new fighters—F-15 production has ended and F-16 production will be terminated in fiscal year 1993. To provide the most cost-effective force, we plan an aggressive 15.25/11.25 Active/Air Reserve Component (ARC) mix.

One of the first considerations of a theater commander is control of the air—since the advent of modern airpower, no major conflict has been won without it. Control of the air (air superiority) protects surface forces and provides freedom of action for both surface forces and air forces. For example, the air supremacy established in Desert Storm allowed General Schwarzkopf unparalleled freedom of maneuver in his air/ground battle. U.S. forces have come to take air superiority for granted. Our ground forces have not had to operate without air superiority since the early stages of World War II—and not a single U.S. soldier has been killed by an enemy air attack since 1953. Air superiority is also a question of where control of the air will take place. Since World War II, the United States has enjoyed the ability to control the enemy's airspace as well as our own. But to maintain control of the air into the next century, we need to modernize our air-to-air fighter forces. Two programs—the Advanced Tactical Fighter (ATF) and the Advanced Medium Range Air-to-Air Missile (AMRAAM)—are the keys to maintaining control of the air for the long term.

The ATF marries stealth, advanced avionics, and advanced performance (notably agility and supersonic cruise) to ensure control of the air—in both our own and enemy airspace—in the 21st century. In Operation Desert Storm, our fighter forces engaged adversaries equipped with what were, in some cases, equally advanced aircraft—superior training, tactics, and operational art proved to be the edge. Future adversaries will learn from this war and such advantages cannot be counted on to prevail. The ATF, combined with high quality training, will ensure that we maintain that edge for the foreseeable future.

The ATF program fits the Packard Commission acquisition recommendations and provides a model for future programs. The Packard Commission recommended a prototyping strategy for early testing and streamlined acquisition management. In 1986, the ATF entered a 56 month demonstration/validation phase. Since that time, we have tested various hardware and software prototypes, flown four prototype flight demonstration aircraft over 150 hours, met or exceeded radar cross section testing expectations on full scale models of the two prototypes, tested twelve prototype engines over 4,000 hours, flown avionics flying labs on over 100 sorties, and tested avionics integration in ground laboratories. In addition, acquisition management follows the new Packard-recommended streamlined chain of authority. The ATF is our highest priority fighter program.

AMRAAM will provide existing and projected fighters with a critical edge in combat. Current radar missiles must be continuously guided to their target by the launch aircraft, which must keep its radar antenna pointed at the target until missile impact. This severely restricts the aircraft's maneuverability and reduces survivability—moreover, only one target can be engaged at a time. With AMRAAM, our pilots will be able to launch a missile at one target, maneuver, engage and launch at another target, and continue maneuvering—all while the missiles are independently homing in on their respective targets. Recent tests of AMRAAM have been very encouraging. The program will enter full rate production with 1,000 missiles in fiscal year 1992 and 1,310 missiles in fiscal year 1993.

An important component in control of the air involves suppressing enemy air defenses (SEAD). To maintain our effectiveness in this crucial area, we will replace the F-4G Wild Weasels with advanced capabilities on the F-16, F-15E, and future stealthy systems. Program difficulties and budget limits led to cancellation of the Tacit Rainbow defense suppression drone.

In attack operations, airpower's speed, range, and lethality allows rapid shifting of effects, concentrating firepower wherever the joint force commander needs it—from the close battle, across the length and breadth of the theater, to its deepest reaches. In the early days of Operation Desert Storm, our tactical fighters were employed for strategic effect—to reduce the enemy's capability and will to wage war. Our fighters engaged in interdiction operations to delay, disrupt, and destroy enemy surface forces and material and ensure a favorable ground force ratio at the point of contact. We also conducted air attack over the battlefield (close air support and battlefield air interdiction) by providing direct and indirect air support of ground forces.

To sustain these important attack capabilities, we will enhance our existing forces. The F-117A, which proved the promise of stealth technologies in Desert Storm, will be retained. Elements of the F-16 force will be provided with LANTIRN pods for precise night attack. The F-15E, capable of delivering precision-guided munitions (PGMs) at night, will be fully fielded—as these squadrons enter service, all of the F-111s, except the PGM-capable wing of F-111Fs, will be retired. The Air Force's next generation interdiction aircraft, the Advanced Tactical Aircraft (ATA), was to be a variant of the Navy A-12. In light of the A-12's cancellation, the Air Force will consider the Navy A-12 successor and study the potential to adapt the ATF to an air-to-ground role. For close support work, we will retain (and enhance) two squadrons of A-10s and improve Block 30 F-16s to an F/A-16 configuration in place of the canceled A-16 program.

New munitions—the Sensor Fuzed Weapon and stand-off precision weapons like the AGM-130B—will sharpen the claws of this smaller attack force. Overall, the future attack force will have greatly increased capabilities to deliver weapons precisely and at night. Recce pods will be procured for F-16s to eventually replace the RF-4Cs—such aircraft will not be maintained in separate squadrons, but will be embedded into existing units.

Our heavy bomber forces will be integrated into theater/contingency operations as the USAF transitions from "tactical" airpower and "strategic" airpower to the integrated employment of airpower. One key organizational initiative is the composite wing. Effective airpower employment depends heavily on the close integration of a range of assets—bomb droppers, fighter escort, jamming aircraft, lethal defense suppression aircraft, airborne radar platforms, tankers, airlifters, and the like. Under the composite wing initiative, many of the assets needed to form composite force packages will be located at one base under one commander. This will increase the speed at which we can deploy, significantly reduce C3 problems, and enhance warfighting effectiveness.

SUPPLY RAPID GLOBAL MOBILITY—AIRLIFT AND TANKERS

As forward forces decline, but global interests remain, mobility will be even more in demand. Strategic mobility lies at the heart of a credible deterrent posture in such an environment—without the capability to project power, there is no conventional deterrent. The Air Force provides two important components of U.S. strategic mobility: airlifters and tankers. Our objectives in the fiscal year 1992/93 budget request are to enhance U.S. rapid response capabilities and increase interoperability among the services.

Airlift Forces

To provide mobility for U.S. forces, the Nation has historically relied on a balance of the complementary capabilities of the mobility triad: airlift, sealift, and pre-positioning. Each has advantages and disadvantages—we capitalize on each method's virtues to compensate for the others' limitations. Airlift is an ideally suited mobility tool for an environment of uncertainty with widely dispersed potential flashpoints. As Vice Admiral Butcher, DCINCTRANS, recently pointed out: "We may not always have the luxury of 161 days to position our forces."

Exhaustive studies over the past decade have produced a single, consistent answer—the C-17 is the right airlift aircraft for the future. These studies call for an airlifter that can fly long ranges and carry outsize cargo, while providing the tactical performance and agility to open up more airfields for global operations. The most recent analysis—the Major Aircraft Review (MAR)—was conducted at the request of Secretary of Defense Cheney. The study looked at a wide array of options in comparison to the C-17 program, including refurbishment of the C-141 force and procurement of other aircraft such as the C-5 or civil transports. Once again, the choice was clear. As Secretary Cheney testified to Congress, the analysis showed: "The C-17 offered the most capability at least cost in every case."

The C-17 combines current technologies to create what is in many respects a revolutionary capability delivery—"direct delivery." Cargo and personnel can be flown from the United States or elsewhere directly to where they are needed. In short, the C-17 combines the advantages of a strategic airlifter like the C-5—speed, range, aerial refueling, and payload (including outsize cargo)—with those of a tactical airlifter like the C-130—survivability, ability to operate on short, unimproved airfields, agility and maneuverability in the air and on the ground, and the ability to employ different methods of airdrop. The C-17 is highly flexible, designed to efficiently meet the Nation's airlift needs across the entire range of potential scenarios.

The importance of this flexibility can be seen in looking at the operations the United States has conducted in the past 14 months. In an airfield constrained environment (like Panama), the C-17 would allow deployment of a Just Cause-sized force in just over half the time. In a relatively unconstrained airfield environment (like Desert Shield), the C-17 would still deliver significantly more power—for example, 12 more fighter squadrons and 2 more brigades in the first 12 days. Desert Storm operations add emphasis to the importance of the C-17's outsize capabilities. When the Army needed several hundred refueling trucks rapidly deployed to support maneuver operations, the Free World had only the C-5 available—the C-17 could have helped pick up that load, and could have delivered them directly to wherever they were needed.

The first C-17 aircraft has completed assembly and is being prepared for first flight this summer. This budget funds 6 C-17s in fiscal year 1992 and 12 in fiscal year 1993—it also reprofiles the program to stabilize funding and provide a more modest ramp up to production of 18 aircraft per year. The Major Aircraft Review adjusted the program to a goal of 120 aircraft. The C-17 remains the Air Force's highest priority mobility program.

The reduction in the planned buy of C-17s—a decision taken for affordability reasons—requires modernization of our tactical airlift forces to make up for the C-17's intra-theater contribution eliminated by the MAR. The C-130 fleet is aging and elements require replacement. C-130Hs will be procured—these represent an off-the-shelf capability with essentially no development cost. This budget funds 8 aircraft in fiscal year 1992 and 12 aircraft in fiscal year 1993.

Tanker enhancements

Aerial refueling increases the Nation's flexibility to respond in a timely manner across the entire spectrum of conflict. Inflight refueling increases the range and ordnance carrying capacity of receivers—demand for refueling has become increasingly important to deployments and combat operations. During the first 4 months of Operation Desert Shield, tankers flew over 10,000 sorties to offload fuel to almost 19,000 receivers. In the first 25 days of combat operations in Desert Storm, U.S. tanker forces flew almost 7,000 sorties to refuel about 20,000 USAF, Navy, Marine, and allied aircraft.

The KC-135 re-engining program, which provides modified KC-135Rs with a 50 percent improvement in refueling offload compared to the KC-135A, is continuing, although at a more affordable pace. In an effort to increase tanker efficiency, flexibility, and interoperability, the Air Force is also pursuing a multipoint initiative that expands on the existing KC-10 multipoint program. When refueling fighter aircraft in employment operations, tanker requirements are typically driven by time and distance constraints—within a given refueling orbit, only a certain number of aircraft can cycle through the single refueling point on our current tankers. Additional offload points—known as multipoint capability—can increase the number of fighters that can be refueled during the available tune and increase operational efficiencies.

The multipoint initiative involves both fighters and tankers. The Air Force plans to add wing-tip drogue pods to KC-135R tankers. This will provide multipoint capabilities to a larger portion of our tanker force and reduce interoperability problems when refueling probe-equipped fighters (such as those fielded by the Navy, Marines, and allied nations). During the first 25 days of Desert Storm, for example, USAF tankers refueled about 4,300 Navy and Marine aircraft. Fitting probes to F-15s and F-16s will allow Air Force fighters to take advantage of multipoint tankers (although all of the fighters will retain their boom slots for maximum flexibility).

CONTROL THE HIGH GROUND—SPACE AND C^{3}I SYSTEMS

Space is the high ground of the future. Space-based systems offer great military advantage: global coverage, low vulnerability, and autonomous operations. Smaller force levels and access to fewer forward bases will increase dependence on the force multiplying capabilities of space systems. Historically, the Air Force has been the principal provider of space systems for the Defense Department. The Air Force provides the infrastructure, approximately 90 percent of DOD's space-experienced personnel, and roughly 80 percent of the DOD space budget. Recent operations in Desert Shield/Storm have illustrated the unprecedented degree to which space systems have become integrated into day-to-day battlefield operations. Indeed, some have begun calling it the world's first "space war." Our objective in the fiscal year 1992/93 budget is to provide a balanced level of funding to meet the full range of critical requirements for the long term in communications, warning, surveillance, and navigation.

Space-based communications assets provide for global, secure, and reliable command and control of forces. The Air Force's highest priority space/C^3 program is

MILSTAR. The program has been restructured to reflect congressional guidance. We have reduced overall costs, eliminated lower priority program features, retained essential capabilities, and increased the system's tactical orientation.

Attack warning systems have been restructured in light of affordability concerns and the decreased likelihood of a massive Soviet attack. The space-based Boost Surveillance and Tracking System (BSTS) program was terminated—in its place, we will sustain the Defense Support Program (DSP) and pursue technology options for a potential follow-on. Continued deployment of a forward line of radars which comprise the North Warning System will provide atmospheric coverage for North America. The Over The Horizon Backscatter (OTH-B) radar system will be mothballed. Should conditions dictate, the OTH-B line could be brought back into service within a few months.

Surveillance systems provide critical information to battle commanders, regardless of conflict location. Air-breathing systems will be enhanced greatly through the acquisition of the Joint Surveillance Target Attack Radar System (Joint STARS), which was recently proven in combat during Desert Storm. And E-3A Airborne Warning and Control System (AWACS) will be upgraded to provide a cost-effective enhancement to this system's proven capabilities. These systems, together with collection assets like the RC-135, constitute a deployable set of "eyes and ears" for the theater commander. The Space-Based Wide Area Surveillance (SBWAS) program has been adjusted to a technology development program.

Space-based navigation systems enhance global deployments of air, land, and sea forces, as well as provide pinpoint weapon systems accuracies. The Global Positioning System (GPS) satellite constellation should be complete in fiscal year 1993. Troops in the featureless desert, sailors entering unfamiliar waters, and airmen conducting precision strikes have all attested to the critical contribution of this space-based system.

BUILDING U.S. INFLUENCE—STRENGTHENING SECURITY, PARTNERS AND RELATIONSHIPS

The Air Force provides the capability to enhance security conditions, strengthen security partners, and project U.S. influence, often with limited or no use of U.S. forces. Since the formation of the Air Force, we have conducted over 80 shows of force/presence missions—on every major continent and over every major ocean. Beyond our lethal assets, long-range surveillance aircraft, such as AWACS, Joint STARS, and the RC-135 also provide the means to accomplish national objectives. Packages of surveillance assets are able to deter adversaries by letting them know we are watching their every move. In the 1980s, for example, AWACS aircraft have deployed over a dozen times to various troubled regions of the world. In future, Joint STARS and RC-135s can deploy in conjunction with AWACS to provide new avenues for non-lethal deterrence and assistance to allies.

Since 1947, the Air Force has conducted over 120 air movements of national influence—activities with relatively overt geopolitical overtones (the delivery of key materials, the movement of third country forces, and the evacuation of Americans and foreign nationals). When such operations need to be carried out quickly—as they almost always do—Air Force assets will be a key player. Humanitarian operations in response to disasters also play a role in supporting U.S. national security objectives by providing foreign populations with a favorable image of the United States. In indirect fashion, this can play an important role. How often has the Air Force been called upon to perform humanitarian operations? The answer is more often than most would realize—over 360 times since World War II.

Security assistance allows us to influence events and protect national interests in areas where more direct means of intervention are not viable. Air Force training and logistics aid are politically acceptable in many situations where other forms of influence are not welcome—and the commonality of training and systems enhances interoperability and security interests with allies. Since the 1950s, the Air Force has trained many tens of thousands of foreign pilots and other military students—over 45,000 since 1980. U.S. Air Force aircraft and associated items are widely recognized for their capability (and thus in demand), an impression that will be heightened by the extraordinary success of Operation Desert Storm. Today, the Air Force share of DOD's Foreign Military Sales program stands at approximately 45 percent. And the USAF is currently engaged in 200 cooperative scientific and R&D projects across the globe. The Air Force continues to posture itself to support these important avenues in building U.S. influence overseas and supporting the security interests of the United States and our allies.

CROSS-CUTTING ISSUES

To operate better and smarter, the Air Force is re-emphasizing efficiency and focusing on the process of continuously improving quality. The common denominator is capability. As we reduce in size, we must maximize capability by protecting quality forces, readiness, modernization, and research and development.

Quality personnel are essential for a smaller force. Active military end strength will decline 71,900 from the fiscal year 1991 to fiscal year 1993 budget requests; civilian end strength goes down 38,000 during the same period. An array of management initiatives help us absorb these reductions—we will streamline, de-layer, and reduce overhead across the Air Force. The integration of two major commands—Air Force Systems Command and Air Force Logistics Command—will provide seamless life-cycle system management. We will reduce a range of headquarters by 25–30 percent. We will eliminate 15 of 19 Air Divisions and all Reserve Numbered Air Forces. Savings from these and other efficiencies mean more dollars available for modernization and people programs. And total quality management practices—such as those from the Packard Commission and the ongoing Defense Management Renew process—are being implemented throughout the acquisition process to procure and sustain quality weapon systems cheaper and faster.

As the preponderance of cuts come from the Active force, we increase the proportion of the Air Reserve Component (ARC) in just about every major mission area (see fig. 4). We will maintain all ARC flags and will continue to modernize ARC forces.

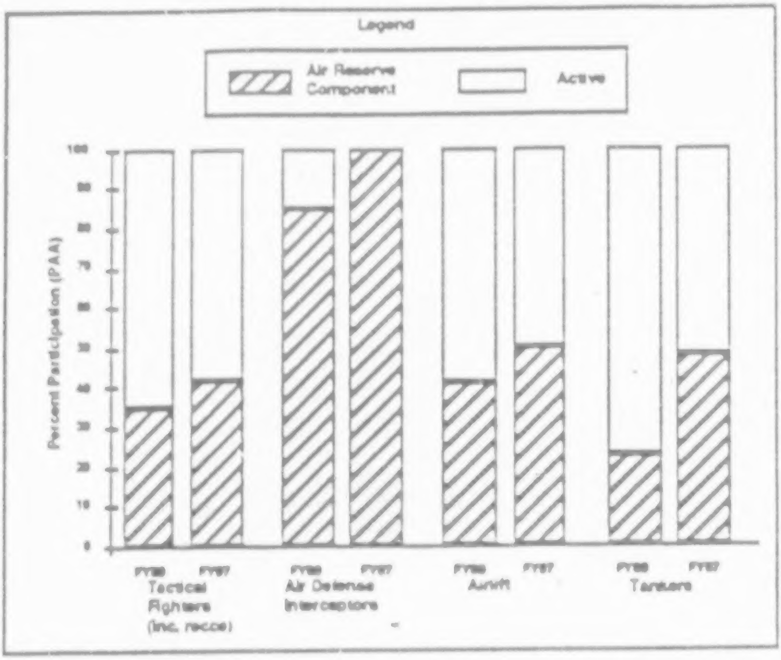


Figure 4—Air Reserve Participation in Key Mission Areas

Training improves the quality of our forces. While reductions in the number of aircraft will reduce the flying hour program by 15 percent, flying hours per aircrew will remain at roughly the same level as today. But fiscal challenges are growing—we face rising costs per flying hour (partially because of fuel costs). Coping with these challenges will be complicated by the fact that approximately 85 percent of the O&M budget now represents fixed, "must pay" bills.

Our funding of readiness and sustainability in the mid-1980s paid off with spectacular mission capable rates in Desert Shield/Storm. Our readiness is at the highest levels ever. But indicators show a reversing trend. Little or no funding for war reserve material (WRM) spares since fiscal year 1988 is beginning to show an impact. To arrest this trend, we propose to maintain a modest level of investment in WRM—continuing to make tradeoffs among our investment and O&M programs to create a balanced capability.

Changes to our infrastructure are tied directly to our plans in other areas. Base closure actions are on track; but the future timing and funding of these actions are key to the successful implementation of our force structure reductions. Military construction (MILCON) for current projects experiences a real decline, while MILCON to support new or additional systems increases. Overseas MILCON stays at minimum levels.

Increasing Air Force concern for the environment is reflected in both policy and commitment of resources. Funding for environmental protection and cleanup approaches $1 billion per year for both fiscal year 1992 and fiscal year 1993—the highest ever.

Gaining the maximum capability from existing forces means drawing upon the force multiplying effects of technology. Despite declining budgets, a robust technological base is essential. In this budget, there is more emphasis on avionics and command, control, and communications technology. Organizationally, we are re-focusing research and development by restructuring Air Force laboratories for greater efficiency.

CONCLUSIONS

We know all the members of the committee share our pride and admiration for the men and women of Desert Storm—from every service. In the air, our forces have struck with a precision and effectiveness never before seen in history. Our success has been so overwhelming that some may be misled into drawing the wrong conclusion—that Iraq was a "paper tiger." Experts know how wrong such a conclusion would be. Iraq began the war with the fourth largest army and the sixth largest air force in the world—and with equipment that included MiG-29s and T-72s, SA-6s and a modern, fully integrated, hardened air defense system. And Iraqi forces were combat experienced. Surrendering didn't come naturally to them—they'd proven their determination in battle against Iran. This was no paper tiger. Instead, it was a nation and a military stunned as we seized and held the initiative. At the strategic level, Iraq was a nation stunned by the effectiveness of our air campaign. At the operational level, it was a military stunned by the effectiveness of our interdiction campaign. And at the tactical level, it was an army stunned by the effectiveness of our air/ground campaign.

While time and analysis will undoubtedly uncover a number of reasons for the success, three will undoubtedly be key. The first is quality forces. There is simply no substitute for bright, well motivated people. The second is quality training. Our people were ready to do the job right the first time out—they didn't have to learn the hard way. The third is quality systems. We have given our people the modern equipment they need to do their job effectively, and do it with minimal casualties. The challenge now will be to look ahead to ensure we provide the capabilities our men and women will need 10 years from now to defend our interests equally effectively.

The steps outlined in this budget protect quality forces, readiness, and modernization despite significant fiscal constraints. They do so by reducing force structure, streamlining organizations, decreasing overhead costs, and balancing sustainability. Declining budgets have posed real challenges—and we've had to make tough decisions. We've terminated numerous programs (Peacekeeper, F-16, Tacit Rainbow, ATA, A-16, Mark system, BSTS, OTH-B), and reprofiled and restructured many others (PRG, SRAM II/T, B-2, MILSTAR, C-17, and KC-135R, for example). Our objective is to create a smaller force with cutting edge capabilities and top quality people. The fiscal year 1992/93 budget ensures that the future Air Force will possess capabilities needed to provide global reach and global power—capabilities that are essential to underwrite U.S. national security in an uncertain world.

Thank you, Mr. Chairman.

Chairman **NUNN**. Thank you, Mr. Secretary. We thank all three of you for your presentations.

Having asked a very brief, short, concise question leading off yesterday and gotten a 30-minute answer, I am going to yield my time in an act of unprecedented self-discipline here and, Senator Thurmond, call on you first, and I will trail today.

Senator **THURMOND**. Thank you very much, Mr. Chairman.

I want to welcome you distinguished gentlemen here today and thank you for all you did in the recent war effort, fielding the forces that proved to be so professional and competent in the victory over Saddam Hussein's forces.

Secretary Stone, the Army's ambitious modernization program will require significant capital investments. In your statement you list light helicopters, armored system modernization, armor-antiarmor, forward air defense, deep attack, and command and control as priorities. Which of these programs is the most critical to the Army and why?

Mr. STONE. Senator, it is very difficult to single out any one that is most important. What we are all trying to do, I think, is achieve a balance, a balance of capability, a balance of versatility, a balance of response to whatever threat materializes. As those situations change, so do the needs for the individual weapons systems. I really would prefer not to try to single out any one system. I think that I will mention two in response to your question that certainly deserve continued Army support.

When I was in Saudi Arabia recently, as you were, I was talking to a Cobra pilot who was flying an aircraft that was built in 1965. He had been a pilot in Vietnam in that year, and he was telling me that he had flown in Vietnam in 1965 in an aircraft that had a serial number one or two either side of the one that he was flying today in Saudi Arabia.

There comes a time when you have to replace aircraft like that. That aircraft is now 26 years old. It has been modernized. It has reached the end of its modernization capability. I do not want to get into a discussion, unless you wish me to, of specific missions, and I am not implying that every mission that is flown by a Cobra would be the same mission that would be flown by a new light helicopter, the LH program of the Army.

In general, I would say to you that the light helicopter program represents the Army's means of redressing the continuing aging of our fleet, and also gives us a very significant enhancement in two important areas: one, survivability; and two, operating costs.

Senator THURMOND. I assume from what you said you need them all?

Mr. STONE. Yes, I guess you could say that the budget that we have presented to you provides funding for all of those areas; and yes, we would like to have them all.

Senator THURMOND. This question is for both Secretary Rice and Secretary Garrett. It is increasingly apparent that something ominous is happening in the Soviet Union that has resulted in widescale officially condoned evasion of the provisions of the CFE Treaty. I believe it is highly likely that in this atmosphere a START Treaty might not be signed or ratified.

My question is, without START limits, are the strategic forces in this budget adequate for deterrence, and will they be in the future?

Mr. GARRETT. Speaking from our side of the equation, given the decision that is represented in the budget to stop production of the Tridents at 18, and given the capacity that they have in conjunction with other strategic forces, I believe that they are sufficient to provide a credible deterrent, sir.

Mr. RICE. Senator Thurmond, I think that a case could certainly be made that we are retaining, should be made that we are retaining, strong enough strategic forces to maintain an adequate deterrent against an attack from the Soviet Union.

At the same time, however, we will want to, I am sure, continue to evaluate the balance, and if there is no START Treaty, if something happens—and that is not what our plans are; our plans are based on assuming there will be a START Treaty. If something should happen to that, then I am sure that the Joint Chiefs would want to reassess the question of nuclear sufficiency. They may or may not come up with the same answer.

Senator THURMOND. Secretary Stone, does the Army support the restructured MILSTAR program? Specifically, does it satisfy the Army's tactical communications requirements?

Mr. STONE. I think I support Secretary Rice's answer, Senator Thurmond. Obviously, we would like all the capability that we can have in the communications area. We are satisfied that the present program will give us a satisfactory capability.

Senator THURMOND. Secretary Rice, I understand you now have successfully tested a fix for the ALQ–161 countermeasures for the B–1B. I have a number of questions on this. First, did Congress appropriate funds for this ECM system?

Mr. RICE. Senator Thurmond, the work we are doing on the ALQ–161 has come along very well in development. The tests are either nearly finished or essentially finished. The results seem gratifying.

We are committed to an independent review of those results and to provide that independent review to the committees along with a plan for how we will proceed. It will take us until about next summer to complete the testing, the review, and to prepare that plan and come back to you.

The Congress in the past has set a cap of $20.5 billion in fiscal year 1981 dollars on the B–1, and we have never been allowed to have that full amount of funds to support the program. Because there were some delays, some of those moneys flowed into the M account.

At one point a year ago, we thought we had an understanding with the committees that we would be allowed to, in a perfectly legal way approved by the DOD lawyers, to use M account moneys up to the limit of what had flowed into the M account from moneys the Congress had appropriated for the B–1. An action the committees took last fall, however, closed off that alternative, and so we no longer have that source of funds available.

The answer is no, we have not been allowed access to the full amounts that the Congress had set as a cap for the B–1 program.

Senator THURMOND. Second, did the Air Force actually buy 100 systems that did not work?

Mr. RICE. No, sir. We learned in the test program that the system was not working well enough. The upgrades that have been worked on are mostly software kinds of capabilities, and they also are important to a little understood aspect, and that is the supportability of the program.

A large part of what we are up to here is trying to get an unbearable burden off the backs of the troops in the field who have to operate and maintain the B–1s. That is a critical objective of this so-called core avionics fix program

Senator **Thurmond**. Are funds now available to complete the B-1B program?

Mr. **Rice**. No, sir, they are not available at this point, and that is part of what we are obligated to come back to the committee with a proposal on after we have finished the testing.

Senator **Thurmond**. Thank you, Mr. Chairman. My time is up.

[The prepared statement of Senator Thurmond follows:]

PREPARED STATEMENT BY SENATOR STROM THURMOND

Mr. Chairman, I want to associate myself with your welcome and that of Senator Warner, the ranking member of the committee. Our Nation is indeed fortunate to have men the caliber of Secretary Stone, Secretary Rice and Secretary Garrett serving as the civilian leaders of our military forces.

Mr. Chairman, as you know I just returned—along with Senator Warner and several other members of this committee—from a visit to our forces in the Middle East. I want to report that in my almost 37 years in the Senate and over 30 years on the Armed Services Committee, I have never met a more professional group of men and women than the officers, soldiers, airmen, sailors, marines, and coast guardsmen deployed to Saudi Arabia and the Persian Gulf.

There is no doubt that today's distinguished witnesses played a critical role in the fielding of these forces. I believe our forces reflect not only the strength of our Nation, but also the military and civilian leadership of its services. In the service Secretaries appearing before us today we have exemplary models of the compassion, professionalism and tenacity necessary to get the job done.

Although Secretaries Stone, Rice and Garrett and their predecessors have done a magnificent job in building the forces that met and conquered Saddam Hussein's aggression, their battle is only beginning. As the defense budget declines over the next several years—to the dismay of many of us on this committee—they will be faced with the difficult task of maintaining the capability and morale of our world class forces.

It is always easy to maintain a strong defense structure when the money is flowing. It is a challenge to maintain it when the resources are scarce. I am pleased that we will have these three men at the helm of our services during this critical time. I know they will do what is best for the Nation and the men and women who serve it so proudly.

Thank you Mr. Chairman.

Senator **Exon** [presiding]. Senator Thurmond, thank you very much.

Welcome to you gentlemen and once again I think we have to salute you, the Secretaries, for the key role you played in the tremendous success we and all Americans were proud of in the Desert Shield and Desert Storm Operations.

Be as brief as you can in response to questions because we are going to be moving along and all of us have many areas that we would like to cover.

Briefly, could I ask each of the Secretaries to state in their view what the President was referencing in his recent talk to the Congress, wherein he said, it is time to eliminate outmoded systems, evidently referring to experiences that we had had in the Gulf war?

Secretary Stone, I will start with you. What systems or weapons was the President referencing in that remark, if any, from the Army standpoint?

Mr. **Stone**. From the Army standpoint, Senator, I think that probably our candidate for replacement would be in perhaps two categories. One is the modernization program that I just talked to Senator Thurmond about in response to his question, where we do have some aircraft in our fleet that are due for replacement; and then switch over and talk about a very prosaic piece of equipment where we have a fleet of two and a half ton trucks, and again I mentioned that in my opening remarks, which have an average age now approaching 20 years.

I do not think there are very many private sector operators in the United States who would operate 20-year old vehicles, and we do need to replace those. Those are the types of things perhaps the President had in mind.

Senator EXON. Thank you. Certainly nothing very dramatic, then, from the Army's standpoint, is that right?

Mr. STONE. No, sir.

Senator EXON. Secretary Garrett.

Mr. GARRETT. Senator, I took that statement to really mean the President fully supports all of the services' attempts to continue to modernize as we look out into the future. Of course, some of the assets that we have and that were utilized effectively in Desert Shield and Desert Storm are some of our aviation assets that, as with the Army, go back well into the 1960s. They are basically 1950s technologies.

The A-6 of course comes to mind immediately, and is an aircraft that we are continuing to work to replace.

Senator EXON. I guess maybe I read the President wrong, but I have been wondering. Let me ask you, Secretary Rice. I assume the President was not talking about MILSTAR or SDI or the B-2. What program was he talking about as far as the Air Force is concerned?

Mr. RICE. Senator, as you were posing the question I was trying to think through our program and, quite obviously, the B-2 is a top priority modernization effort, and it will be replacing in a sense, it will be replacing old and outmoded B-52s still in the existing force structure.

The Advanced Tactical Fighter is another priority modernization effort. By the time we get it, it will be replacing F-15s which will be more than 25 years old. C-141s have been a workhorse of the airlift force for a long time and they are wearing out, and we have accelerated that process in Desert Shield and Desert Storm. The C-17 is programmed to replace them and enhance our capabilities at the same time.

Of course, we will be phasing out our old F-4s and A-7s, principally from our Guard and Reserve force, and modernizing them with F-16s as well, replacing F-111s, old model F-111s that do not have modern capabilities, with F-15Es.

Senator EXON. Thank you.

Following up, Secretary Rice, on a question that was posed by Senator Thurmond with regard to the B-1B and the ECM problems that we have had, certainly you are, as I understand it, on line and moving aggressively and successfully with some modifications to the B-1 engine.

Is it not true that the Air Force had recognized the fact that probably—and I emphasize the word, "probably"—we are never going to be able to fulfill the ECM capability that was originally envisioned for the B-1B? Is that a fair assessment?

Mr. RICE. Mr. Chairman, we believe we will be able to achieve a significant percentage, but not quite all, of what we had originally hoped to have in the B-1. It might be worth noting that we are $424 million into a $725 million program here at the time when, in effect, our funding source was cut off by the action the Congress took last year.

It is a small, very modest additional investment to make to enhance the capabilities of that whole fleet, in which we have a major investment. As I pointed out in response to Senator Thurmond, we are working in conditions in which we have never actually had access to the full amount of the cap that the Congress placed on the program in 1981.

Senator Exon. Thank you.

I would like to make a statement now that leads into the discussion of where we are going to go in the future. From what I have heard and what I have been told directly, outside of this committee and elsewhere, one of the real outstanding stars of our recent success in the Persian Gulf was the F-117 stealth fighter. I believe of all the systems that we had that worked so well over there, probably had we not had that stealth F-117 fighter we would very likely have had significantly more casualties because of the protected nature of targets that that aircraft went successfully against, as near as I can tell without a scratch, probably the enemy not even knowing they were there.

Now we are looking forward to incorporating that technology that was the forerunner of the stealth program into the B-2. Mr. Secretary, how much relevance do you think the F-117's success has in making the case for the B-2? Is it not only logical that the B-2 would likely be just as capable as the F-117, and therefore maintain nuclear deterrence?

Mr. Rice. Senator, the F-117 was the backbone of the strategic air campaign. It handled the hardest, most heavily defended targets night after night. Certainly, if it had not been available the non-stealthy aircraft that would have had to do the same job and would have been at much greater risk and jeopardy than the F-117 was.

You are quite right, it was never scratched by the Iraqis during that whole campaign.

As one thinks about the future, I think it is important to remember that future scenarios might not give us anything like the kind of preparation time we had for this one. We might have to react much more rapidly. We might be called upon to do it from much longer distances, much farther away.

Our carrier-based capabilities of course provide us an important capability to deal with those kinds of scenarios. So would a stealthy long-range heavy bomber, and that is why we are so interested in and placing so much emphasis on the conventional capabilities that will be embodied in the B-2, as well of course as its value in its nuclear deterrent role.

Senator Exon. Thank you, Mr. Secretary. My time is up. Senator Cohen.

Senator Cohen. Thank you, Mr. Chairman.

Secretary Rice, on the over the horizon radar system, in your statement you indicated that you have mothballed this. Is this a proposal or have you ordered that?

Mr. **Rice**. The Secretary of Defense has approved that plan, and we are proceeding with implementing that plan.

Senator **Cohen**. As I understand it, you have funds programmed for that in the fiscal year 1992 budget, am I correct?

Mr. **Rice**. My understanding is that there are some operating funds that are provided for in the 1992 budget, yes, sir.

Senator **Cohen**. What are the sunk costs? How much has been invested in that program so far?

Mr. **Rice**. I would be happy to get you that number for the record, Senator Cohen. I do not have it at my fingertips.

[The information follows:]

Over the Horizon-Backscatter (OTH-B) Radar

Roughly $1.4 billion has been invested in OTH-B. This includes approximately $230 million for the experimental system, $760 million for the procurement of operational equipment, $200 million for the System Program Office, $100 million for prior limited operations, and $100 million for prior efforts and expected termination liabilities associated with the Alaskan OTH-B.

Senator **Cohen**. Would you also provide for the record what the projected savings are for mothballing it, what recommendations NORAD might have had with respect to the radar system itself, and what the statements are from the contractor, who does not believe you can resuscitate that in a 6 month period of time if in fact it is mothballed? If you could do that for the record, please.

Mr. **Rice**. We would be happy to, Senator Cohen.

[The information follows:]

Over the Horizon-Backscatter (OTH-B) Radar

Operations and maintenance costs for both east and west coast OTH-B radars is roughly $57 million per year. Additionally, 25 full-time military officers are needed for full operations. By mothballing the system in a state that would allow recall within a 6-month period, we save roughly $37 million per year. If the OTH-B system is taken down completely, savings would be roughly $52 million per year.

In concert with CINCNORAD, the East Coast Radar System will be operated 40 hours per week and can be restored to full operations in 6 months. The West Coast will be maintained for recall to full operations in 12 months. The contractor for OTH-B agrees that this mothballing strategy supports the recovery timelines outlined.

Mr. **Rice**. Just to hit for a moment on the problem we were facing there, budgets are tight all over. We had to make some tough tradeoffs, and that is one of them, in this environment. The system would perform, we believe, quite ably in detecting a major aircraft raid on the United States.

Senator **Cohen**. Blackjacks, Backfires?

Mr. **Rice**. There are other assets, of course, the other radar nets, that also provide us the capability to do that. We again, under the assumptions of the changed strategic environment we were in, saw that as a requirement that could take its place a little farther down the line in priority, not that it is not still important.

Senator **Cohen**. Well, we have to also consider, I suppose, in connection with the drug interdiction potential that it holds, it not only can detect Backfires and Blackjacks, but also Cessnas and so forth.

Mr. **Rice**. I would urge you to be careful about that, Senator Cohen.

Senator COHEN. Well, let me suggest on my time it was one of the arguments that was suggested in getting the system in the first place, and I do not think we ought to diminish its significance now.

Let me move on.

Mr. RICE. We need to look at the test results and see what they tell us.

Senator COHEN. I would like to have that, plus the cost analysis that we mentioned.

Secretary Garrett, yesterday I explored a question with Admiral Kelso and General McPeak as to whether there ought to be a unified strategic command combining the Air Force and the Navy's strategic assets and placed under either a Navy command or Air Force command, and I thought I had just stepped on one of Saddam Hussein's land mines.

Has there been any consideration given at your level, Secretary Rice, in that regard, as to whether there would be any justification under the Goldwater-Nichols approach for having a truly unified strategic command to combine those assets?

Mr. GARRETT. I have heard reports of some plans, and I am sure that many options are being looked at, Senator. It has not come to my level, however.

Mr. RICE. Basically the same here, Senator Cohen. I believe the Chairman is examining a broad range of options for modifying the unified command plan over time in the new strategic environment, but as far as I am aware he has not settled on specific recommendations yet.

Senator COHEN. Secretary Garrett, we talked yesterday about the battleships, and Senator Warner was suggesting perhaps we could save one, maybe two. But there came the issue of what kind of capability for ship-to-shore support, fire support, could we provide for the Marine Corps.

Last year both the Armed Services Committee and the Appropriations Committee recommended, I believe, that $31 million be allocated for determination for the MLRS and the ATACMS to be placed at sea. Battleships are one platform for that. Assuming we can even fund one or two battleships in the coming years, what does it mean for the Marine Corps in terms of having that fire capability without any platforms?

Mr. GARRETT. Well, sir, it is obvious, as we have testified in past years, that the four battleships alone provided approximately 33 percent of the naval gunfire support that existed in the fleet before we retired two of them.

Where we are at this point, at least as we survey the landscape and try to look out into the future, is to try to determine what kind of force we are going to have at the end of this FYDP and at the end of the decade. I think it is important, as we restructure the force and make some definitive determinations as to what we will have in place to look at these other options.

I think we need to get a little further down the road to see where this is going to stabilize, if ever, in order to make those determinations.

Senator COHEN. Secretary Rice, you are a strong supporter of the ATF program, and recognizing that you are going to have to forego other types of modernization programs. Have you conducted any alternative studies, as proposed during last year's fiscal legislation, as to how you do that?

Mr. RICE. Senator Cohen, those studies are well under way and we are due, I believe, to provide the results to the committee. I know it is this spring; I do not remember the exact date. My understanding is those studies are on track, will examine thoroughly the alternatives that the committee has asked for.

Senator COHEN. Could I ask, Secretary Garrett, what your thoughts are with respect to the cancellation of the A-12? You are going to have to come up with some kind of a substitute. The question I have is, are we trying to put too much, load too many capabilities on one aircraft?

One of the problems we had with the A-12 was that in order to perform to the specifications that were set out it got heavier, and the heavier it got the less load it could carry, and then finally the expenses sort of overwhelmed it.

What do you foresee in the future in terms of what kind of aircraft should we be looking at? Are there any lessons we could learn from other types of studies that are going on at the Department? What are your thoughts about this?

Mr. GARRETT. Well, sir, of course we were very disappointed to have lost the opportunity that we had been working on for a number of years. And you have seen, I am sure, the report that was done as we looked at the issue. The requirements for that particular aircraft were very rigid, as you allude to, not only in terms of the platform itself and its performance characteristics, but also on the manufacturing side of the equation. The manufacturing technology was also on the cutting edge.

I will be briefing the Secretary of Defense again, hopefully this week, on the Navy's proposals and options that he will take under advisement and subsequently direct me to implement.

One will be to fund what we call the AX program, a replacement for the A-6, which we truly do need to replace with an all-weather, night-capable, carrier suitable attack aircraft. But having come out of Desert Storm, watching the performance of the F-117, I think it has convinced us all that stealth clearly has a place in the future as we look to aircraft that are going to be flying for the first quarter of the next century.

The question that concerns me, and I think the lesson that I take away is that I am not sure we would require the same degree of stealth that we may have thought we needed in the late 1970s and the early 1980s as we put some of these programs together.

Clearly, you need a high degree of stealth early on. However, once you gain control of the air and essentially operate in unopposed air space, I am not sure that you need that continual high degree of stealth. That is, you may be able to back off to a LO kind of platform.

So what we are trying to do as we put the program together is look very hard at these requirements, which obviously affect affordability, and find that balance where we can produce an affordable platform.

Senator COHEN. Are you suggesting that you are trying to integrate your situation with perhaps the Air Force, and the Air Force would have an ATF, and you come in behind that with something less capable?

Mr. GARRETT. No, sir. I have learned in the short time that I have been in this business that affordability is the major driver of almost everything we do. That is essentially the issue with the battleships. It is not that they are not capable and very good platforms. But we have to find that crossover point where we are not paying a 50 percent premium for 2 percent additional performance. We must strike a realistic balance between performance and cost—and move on. We need to capture whatever we can from the taxpayers' investment in whatever stealth programs we have—be it the B-2, the ATF, or the F-117—and apply that knowledge and technology.

Chairman NUNN. Thank you, Senator Cohen. That was a very brief 9 minutes and 15 seconds.

Senator COHEN. I was just trying to recoup from what I lost yesterday. [Laughter.]

Chairman NUNN. You are working on it. Senator Bingaman.

Senator BINGAMAN. Thank you, Mr. Chairman.

Secretary Garrett, you made a statement in your prepared statement which I will just read back to you. It is two sentences. It says: "In the Department of the Navy, Navy funds supporting full-scale development of systems grew by 60 percent from 1980 to 1990. Science and technology funding actually decreased over this same period. Our budget in the 1990s reverses the trend, putting greater emphasis on developing our scientific and technical base."

I would like to ask you to elaborate on that, but I would like to ask the same question of the Army and the Air Force, to see if they agree that, as to their allocation of funds, did they also see an absolute decrease in funding of research and development activity between 1980 and 1990? Are they intending to reverse the trend, if such a trend exists, in the next several years?

Mr. STONE. I do not think I can answer, Senator, between 1980 and 1990 out of what is in my head. The percentage I think for Research and Development (R&D) increased up until about 1985 and we have done our best to maintain it.

I think the most important answer I can give you is in the 1992 budget. In terms of comparing a declining TOA with appropriation accounts, the R&D appropriation sustained real growth.

Senator BINGAMAN. Has there been a decision made in the Army, as there apparently has been in the Navy, to reverse this trend of less emphasis on R&D during the entire next 5-year period or the 1990s, as Secretary Garrett refers to in his testimony? Or is this a year by year decision?

Mr. STONE. I think that we have a number of initiatives in the Army that are trying to strengthen the R&D process. We have a laboratory study that all of the services are participating in. We happen to call ours Lab 21, and we are looking at strengthening the overall function of our laboratories in a number of ways.

I think our principal objective, Senator, based on fund availability is to try to keep our level of funding for R&D at least at a level which keeps pace with inflation. In the near term, we have not been able to accomplish this but will revisit the R&D level of funding in the out year.

Senator **Bingaman**. Secretary Rice, did you have a comment as to the Air Force on either what happened between 1980 and 1990 as far as allocation of funds for research and development or what you anticipate in the 1990s?

Mr. **Rice**. Senator Bingaman, let me tell you what is in our plans. I believe we actually increased the funding in the tech base areas in the Air Force during the 1980s. We can check those actual numbers and provide them for you separately.

[The information follows:]

Technology Base Funding

	Then-year dollars (Millions)
Year:	
1980	$562.0
1981	614.0
1982	628.5
1983	700.1
1984	734.9
1985	758.7
1986	755.9
1987	781.5
1988	773.9
1989	783.8
1990	762.8

What we have tried to do in these declining budgets is to protect our tech base to the maximum extent we can. We tried to look at a guideline of a formula of about 1.5 percent of the TOA going into the tech base area. We have met that pretty well in the existing plans.

We frankly have some uncertainties as we look at that, because there are a couple of large programs that swing the amount that we end up with in the tech base considerably. One is SDI. That money is not appropriated directly to the Air Force, but the Air Force in the space-related area executes a significant amount of the advanced technology work on behalf of the SDI office.

The other program is the National Aerospace Plane, which we do have well funded in 1992 and 1993 in the President's budget, and that also is a significant enough piece of our tech base to measure all by itself.

So assuming that those two continue as they are proposed, we believe our tech base will be in good, strong shape right out through the FYDP. And we are also, as Secretary Stone pointed out, working on a laboratory consolidation initiative in the Air Force, which I think you are generally familiar with, which we believe will strengthen the overall quality and capability of our laboratories along the way.

Senator **Bingaman**. On laboratory consolidation we have some confusion, I gather, in the direction that we gave the Department this last year. We put a provision in section 246 of last year's Defense Authorization Act which established an advisory commission to review potential changes and consolidation in laboratories.

As I understand it, that commission has not yet met and has not been formed. At the same time, we put in the provision on base closure which sets up this three-stage process over 6 years. The first stage of which begins to really take effect on April 15. You're to give us some recommendations on base closures and consolidation activities.

My question is do you intend to try to address this laboratory consolidation issue as part of this first cut on April 15, or are you going to wait until this advisory commission has a chance to be formed and to meet and to make recommendations? How do you sort all that out?

Mr. GARRETT. From the Navy's perspective, Senator Bingaman, obviously you have hit upon a complex problem. You have the base closure that is proceeding apace, although it is, as you point out, set in phases. The laboratory consolidation study that we are working in the Department of the Navy is to be briefed to me in the latter part of this month, as will the base closure.

These processes are not necessarily going to come out being mutually exclusive. But it is too early for me to respond. I would be happy to in the early part of April if I may, once I am briefed on where we are going.

Mr. RICE. Senator, we already know in the Air Force case that at least a significant number, I am not sure yet whether the answer is all, but at least most, of the changes that would be embodied in our lab consolidation initiative are ones which do not cross the thresholds to become captured in the base closure and major realignment process.

So we still have to work a little more on that relationship, just as Secretary Garrett suggested, to understand exactly how we could proceed.

Mr. STONE. I will add just one more element, Senator Bingaman. One of the drivers in this process, of course, is chronology. If we do not get some suggestions and proposals up to you by April 15 this year, we will have to wait 2 more years to do that.

The second point I would make is that there is a lot of linkage between these facilities, and it is difficult to escape the implications of some of the laboratory facilities that may be domiciled on a particular base, if you are looking at that other base as well. It is difficult to segregate out the laboratory facilities.

I think, under the leadership of the Deputy Secretary of Defense, we have been doing a lot of work in building the laboratory structure with all of the Departments. I think you are going to be seeing some of those results on April 15.

Senator BINGAMAN. My time is up, Mr. Chairman. Thank you.

Chairman NUNN. Thank you, Senator Bingaman. Senator Warner.

Senator WARNER. I will pass to Senator Lott, Mr. Chairman.

Chairman NUNN. Senator Lott.

Senator LOTT. Would you like to?

Senator WARNER. Well, I will just yield to you and come up a little bit later.

Senator LOTT. I will be very brief, as brief as possible, about 9 minutes, Mr. Chairman.

Chairman NUNN. Senator Cohen has set the ceiling. [Laughter.]

Senator **Warner**. Today's ceiling?

Chairman **Nunn**. Today's ceiling.

Senator **Warner**. Yesterday's ceiling was a different story.

Chairman **Nunn**. Well, that was not the question; that was the answer.

Senator **Lott**. You seem to be satisfied that the foreign flag vessels are acceptable or they did an adequate job with our military sealift requirements. We were lucky, and I am still worried about what we are going to do for our future needs of fast sealift capability. Are we going to have a major initiative in this area soon?

Mr. **Garrett**. Well, I have asked the CNO and the Department of the Navy's Acquisition Executive, Mr. Cann, to put together a program immediately, based on the early lessons learned that have come back. I am sure that you are aware of Admiral Donovan's representations relative to the need for more roll-on, roll-off ships as a first step.

I have asked them to put together a program that will provide for the design and construction of some roll-on, roll-off ships. But also I have asked them to look to the commercial marketplace for ships that may be available that we could acquire at a reasonable price or at a better price than new construction. We are looking downstream, Senator Lott, at a number of options to address the issue of sealift in the context of the President's Sealift Policy.

It is clear to me—based on what we have experienced and notwithstanding the fact that we moved more equipment faster and farther than we have ever done before, without any notice—part of the plan always was to rely on commercially flagged vessels in addition to those ships that were in the RRF—that some very valuable lessons have been learned and we are moving out to address those issues.

Senator **Lott**. I certainly hope you will do that, and I think this committee has shown a substantial interest in doing more in this area.

Mr. **Garrett**. This time I think, with all due respect, sir, we will be able to do it right. We have had a fairly extensive experience over the last several months.

Senator **Lott**. Mr. Secretary, there have already been questions about naval aviation and the problems with the F-14 procurement decision, the A-12, and so forth. What worries me is how are we going to pay for what we are seeing now in the supplemental?

I am specifically concerned, and I am hearing in turn that the Navy is going to come in and take money out of surface ships to put over into aviation. I would be very disturbed if that happened to be the decision. Is that what is afoot?

Mr. **Garrett**. Well, I have certainly made no decision to do that. But I have to say, Senator, that as I struggle with these issues and the ever-declining top line, I really believe that the Department—and I think it is true of all the services—needs to strive for the maintenance of a balance of warfighting capability in each of our services. I have taken funds from the SCN account in years past to address other, more pressing issues. Unfortunately, there is not much left to move around.

Senator **Lott**. I realize we are forcing you to borrow from Peter to pay Paul. It is the President's fault for what he has proposed in the military budget and our fault because of what we are, in effect, forcing on you. We are collectively making a mistake in our decisions if we force you to start taking from surface ships or other areas to pay for shortfalls or problems in aviation.

It just seems to me the Navy is still ships—with a very important part for aviation and submarine. We are going to be following that decision or those decisions very closely.

Secretary Rice, you made the comment in your briefing that we are going to be smaller, but we are going to have high quality. Is there a point where you would come up here and say to the committee, "Committee, your recommendation, as a matter of fact, was a problem for us?" The Chairman asked you a question on MILSTAR. I mean, the fact is it probably was wrong advice from us.

I just would hope that some secretaries and some admirals and some generals would come up here at some point and say, "No, we cannot perform our mission with these dollars." I would hope that maybe you would be prepared to say to us—if I were you, I would want to do that, because 5 years from now, if we are not capable of performing the roles that the military needs to perform, I would want it on the record that I warned the Armed Services Committee, "This is not enough, not enough men."

One of the reasons why we are going to have to retire these battleships is because of manpower, because it takes so many sailors to run them. That is a major consideration that we are forcing, and reduction of numbers of military personnel is a major problem for you.

Why do you not tell us that?

Mr. Rice. Senator Lott, without returning to the MILSTAR question, I will stand on the answer I gave on that one before.

There are a number of things in the guidance that the committee has given us which we have very serious problems with and, since you have given me the opening, I will take this opportunity now. I was going to ask for it at the end if one did not come along.

Chairman Nunn. I have to say, General McPeak gave us at least four different areas yesterday that he thought needed changing. I do not find that over the years they have been bashful at all, Senator.

Mr. Rice. Those are the same four probably, I am sure, Mr. Chairman, that I was about to mention: the directive to transfer all the C-130s to the Reserve components, the directive to make the average airplane size of squadrons the same in fighters and tankers and airlifters in the Active and the Reserve components, the directive to transfer the A-10 to the Marine Corps and the Army for missions, as I understand, it, they do not believe that airplane will meet their requirements for.

Chairman Nunn. Might it be noted on that one that the Air Force leadership has changed its mind on the role of the A-10 since that provision was put in. I think sometimes those things go unnoticed.

Mr. Rice. Well, I would like to say, Mr. Chairman, there really has not been a change in mind on the role of the A-10. What there has been is a change of budget, and we cannot any longer afford the A-16 program. We were going to procure a significant number, several wings, of a new airplane, a significantly adapted F-16 for that mission. We cannot afford that in this budget environment and, facing up to that fiscal reality, the smart thing to do is to retain some of the A-10s longer than we were going to.

We will actually have in the Air Force force structure the two wings I mentioned of the A-10s and another wing and a half of A-10s in the form of OA-10s, observation aircraft. They are not counters in that 26.5 wing structure, either.

We will be keeping a goodly number of A-10s. We would have kept some of them anyway. We will certainly keep more now.

The fourth issue, of course, is the ability to start full-scale development with the Advanced Tactical Fighter in the last quarter of this year, and we recognize we have to complete our own source selection, our down select between the teams. We have to present the results of that for the milestone II review of the Defense Acquisition Board, and after we get through that gate we would like to feel that the door is open here to come back and work with the committee over the approval to go ahead if that is the indicated course at the time.

Senator LOTT. Thank you, Mr. Chairman.

Chairman NUNN. Is Senator Lott's time up?

Senator LOTT. Yes. Thank you, Mr. Chairman.

Chairman NUNN. Let us see where we are. Senator Kennedy is next.

Senator KENNEDY. Thank you, Mr. Chairman.

I will take this opportunity to express admiration to each of you for your own leadership over these recent days and weeks. It has been enormously impressive.

All of you in your testimony today talk about the value of the personnel, both in Desert Storm and in terms of the scaled-down future, and what we have all seen is the change in both the types of individuals who have been attracted in the recent past and continue to be today.

If you look back at the time of the Vietnam war, about 15 to 18 percent of those servicemen had families. Now it is closer to 60 percent. If we have situations where you are going to have tensions within the families about the fighting men and women in the forces, that is going to have an impact. If it is a particular pressure, we can really question about how long any of them will be away from home.

I think many of us have had a chance during this period of time to visit a number of the bases where these family support services have been developed, and impressively so. That has obviously drawn resources down. There have been additional expenditures at a number of the schools that have been close to military bases in terms of counseling and working with parent groups.

We have been more dependent upon the reserves. They will be spending more time overseas than was anticipated, with all kinds of impact when they return back to family situations. There has been outreach to many of those families.

There has been a drawdown in those services. There has been a drawdown in some funding somewhere, because there has already been an expansion of the services to date. I think we can anticipate, at least for some period into the future, a continuing demand, until at least we get the personnel back, for us to provide at least some counseling and some help and assistance to those in need.

It was really in response to that that the Congress allocated about $50 million, not knowing exactly when all the troops are going to be back and what the specific demands in particular communities are, giving maximum flexibility to all of the services.

You would comment on what you know about the support service programs. Specifically, the need for them in order to try to deal with some of the pressures that are existing, both in terms of these service men and women being away and also the pressures that they are going to have in terms of re-entry into a family situation. What might you be able to tell us about these programs?

Mr. GARRETT. Well, sir, from the Navy and Marine Corps point of view, of course, our people are quite used to being away for long periods of time and then assimilating back into the civilian community from whence they departed. That does not, of course, make it any easier for us, other than we have a great deal of experience in dealing with these sorts of issues.

This will obviously be a continuing need for the Navy and the Marine Corps, not only for the short term, but as we look out into the out years. While there has been a diminution, if you will, of some of the funding that we would like to put against that, which is really primarily driven from the decrease in the top line that all of the services are continuing to experience, we will continue to consider—because I like to follow the old axiom that you put your money where your mouth is—that our real edge ultimately is in our people and our technology. We will continue to fund those programs adequately within the context of the overall budget.

Senator KENNEDY. Secretary Rice.

Mr. RICE. Senator Kennedy, the family support centers and child care programs have been very important initiatives in the Air Force to help us respond to the kind of demographic change in our population that you are alluding to. During Desert Storm we moved to establish the equivalent of family support centers for the Reserve and Guard units that were deployed. I think that was a very important initiative, and we will continue to strengthen those programs as we go forward.

General McPeak and I are also looking at another initiative, trying to take account of these changing social and demographic conditions that we deal with, and that is trying to move to a policy under which a much greater allowance would be made for personal choice in assignments in the future in the Air Force.

We doubt if we will be able to get all the way to all volunteers for everything, but we want to move the operations of personnel assignment as much in that direction as we can. We are looking for any sound way we can find to respond to the changing demographic conditions that we face.

Mr. STONE. I will just add a few other comments, Senator Kennedy. There have been, I think, seven or eight pieces of legislation introduced in this session already, including several by yourself, which deal with human problems in the Armed Forces. I have not read all of those in detail, but in principle I am supportive of all of them because of our recognition of the need to redress, in certain cases, programs that are inadequate—there are a couple in that category—and to provide as many benefits as we can to people who deserve them.

The only concerns that I have, I think, are two: one, the long-term funding implications of those programs, and we would want to look at that carefully; two, the degree to which they duplicate other services that we already have.

Senator **Kennedy**. Well, we certainly look forward to working with you. We intend to provide the kinds of flexibilities to the services so that they may be able to do that.

Let me ask you, to get back to an earlier question, Secretary Garrett, just with regard to the sealift. I think the services have indicated that they intend to spend the $1.2 billion that has already been appropriated. Can you be somewhat more specific on what you are going to spend it on?

Mr. **Garrett**. Well, that gets back to the answer that I was giving to Senator Lott. The $1.3 billion, I think, has been authorized and appropriated, and I am looking to initially spend some of those funds on roll-on, roll-off ships. I have asked the CNO and the Acquisition Executive to put together a program that will allow us to move forward both in construction as well as looking to the market for some roll-on, roll-off ships that may be available and immediately useful to us. That is where those funds would be directed initially.

Senator **Kennedy**. My time has expired. Thank you, Mr. Chairman.

Chairman **Nunn**. Thank you, Senator Kennedy.

Senator McCain. I am sorry. Senator Warner.

Senator **Warner**. That is all right. I just deferred a bit, and I think I will step in now. [Laughter.]

Chairman **Nunn**. I will go along with anything you guys want.

Senator **Warner**. First, Secretary Garrett, you appeared yesterday before a subcommittee of the Appropriations Committee of the U.S. Senate, at which time there was a discussion on the infrastructure in the United States for shipbuilding and, more precisely, new submarine construction.

Mr. **Garrett**. Yes, sir.

Senator **Warner**. I was able to read your statement, and then I had to depart. I was not present at the time that you responded to questions. I went back and researched the record with others, and I think you handled yourself very well, given the unusual nature of that hearing.

Mr. **Garrett**. Thank you, sir.

Senator **Warner**. I would just like to ask now, Mr. Chairman, unanimous consent that the Secretary of the Navy prepare a condensation of the testimony that you gave that subcommittee yesterday, because it may well become relevant to the issues before this committee.

Chairman **Nunn**. Which subcommittee was that?

Senator **Warner**. The Subcommittee on Defense of the Committee on Appropriations.

Mr. **Garrett**. I would be happy to do that, Senator Warner.

Senator **Warner**. Yes, would you please.

Chairman **Nunn**. Without objection, we will receive that and have it as part of the record.

[The information follows:]

TESTIMONY OF HON. H. LAWRENCE GARRETT, III, SECRETARY OF THE NAVY, TO THE DEFENSE SUBCOMMITTEE OF THE SENATE APPROPRIATIONS COMMITTEE, MARCH 19, 1991

SSN-21 SEAWOLF CLASS ATTACK SUBMARINE

As recent events make clear, this nation continues to play a key role in promoting stability in an unstable world. We have been called upon to project power into remote areas to maintain our national interests and those of our allies. And we need to maintain that capability. Geographic realities dictate that a crucial portion of our national military capability reside in robust naval forces, including a strong submarine force able to maintain sea control, provide strategic deterrence, project power into hostile areas, and deter any adversary.

The SSN-21 attack submarine is key to maintaining undersea superiority over our potential opponents. Although there have been clear changes in the military situation of the Soviet Union over the past year, one thing has not changed. The Soviet Union has the world's largest submarine force, and is continuing a determined effort to modernize that force. New Soviet submarine construction has continued unabated, and we expect new, capable classes of submarines to be introduced in this decade. Additionally, the proliferation of advanced technology weapons systems, air independent propulsion, and acoustic quieting to third world countries promises to increase the submarine threat to our battle groups in the future. Our attack submarines must be able to fulfill other missions than anti-submarine warfare (ASW), such as anti-surface warfare (ASUW), strike, mine warfare, and special warfare in the littoral areas where regional contingencies will occur. They must also continue to provide indication and warning in forward areas. With this in mind, it is vital that we produce submarines that can outperform the full range of threat now and into the next century.

The SSN-21 represents the technological edge that will allow us to do just that. It incorporates quantum improvements in firepower, sensors, and quieting, giving it the technological superiority we must guarantee to the submariners who may take it into harm's way. Our recent experience in the Persian Gulf dramatically illustrates that technologically superior weapons are a force multiplier, giving us far more leverage than a mere balance sheet of equipment would suggest. Given the continued Soviet submarine effort, we must continue building the SSN-21 class, offsetting the Soviet's quantitative advantage with our technical strength.

Implementing this strategy in a period of declining budgets is hard. These budgets have drastically reduced our proposed submarine procurements, pushing up unit costs. The fiscal year 1991 President's budget called for construction of 28 submarines, 21 SSN-21s and 7 Tridents, from 1991 through 1997. The current President's budget calls for nine SSN-21s for the same period. This represents a 67 percent reduction in the planned procurements, impacting unit costs and threatening our submarine industrial base.

As a result, the end cost of the SSN-21 contained in the President's budget is $2.01 billion, compared to an end cost of $1.79 billion for the fiscal year 1991 ship. The increase can be directly attributed to deletion of other submarine work from the budget, as well as inflation. With unit costs at this level, and procurement limited to a single submarine until fiscal year 1996, we have to define a submarine acquisition strategy that will provide technological superiority, maintain a reasonable force level, control costs, limit risk, and sustain a viable nuclear submarine industrial base.

In the near term, we will maintain technological superiority by continuing procurement of the SSN-21 at the reduced rates mandated by fiscal constraints. It would be wrong to authorize construction of additional improved 688's in place of the SSN-21. While the improved 688 is a highly capable platform, it is not nearly as quiet or effective as the SSN-21, and would not guarantee the advantage we need into the next century. The SSN-21 restores the technological margin we have traditionally enjoyed over our potential adversaries, a margin that has eroded recently as the Soviet Union has concentrated its resources on improved submarines. By building the SSN-21, we will get a platform significantly more effective than the SSN-688, and solidify the many hardware and software advances made by the SSN-21 and AN/BSY-2 development programs over the last 8 years.

While this near term strategy will maintain our technical supremacy, we face a long term problem of maintaining an adequate force of first line ships when the 688 class begins to be retired. As part of an overall effort to seek economies in all our ships and aircraft, I have recently directed the Chief of Naval Operations and the

Assistant Secretary of the Navy for Research, Development, and Acquisition, to begin studies for a new submarine that would incorporate the technologies developed for SSN-21 and new technologies, in a smaller, less expensive platform as an option when the Los Angeles class submarines reach the end of their service lives after the year 2000. It takes over 10 years to design and build a new submarine class; we are starting this effort now to ensure the new class will be available when needed, and to keep in place the design talent that has been assembled to support SSN-21. The proposed new submarine will complement SEAWOLF in the multi-mission environment of the 21st century. While the SEAWOLF design strongly emphasizes ASW capability against the very best projected Soviet submarines, this new submarine design will emphasize capability in other kinds of contingencies. Both of these first rate ships will allow us to maintain an adequate force level as we move past the year 2010.

Controlling costs and limiting risk go hand in hand. The SSN-21 and its AN/BSY-2 combat system have an extensive development and test program designed to limit risks that could translate into cost increases at a later point. This program is unprecedented in scope, and builds on the lessons we have learned from earlier programs. The SSN-21 effort has focused on translating technology to tested deliverables in areas including silencing, advanced submarine control, new auxiliaries, improved performance propulsion machinery, target strength reduction, a new propulsor, weapons handling and launch, and submarine survivability.

Key items developed under the SSN-21 program have been tested at sea on SSNs or SSBNs. These include special hull treatment, auxiliary equipment, and a prototype propulsor. Others have been or will be tested as full scale prototypes on land. The propulsor and hull form were tested using a large scale model at Lake Pend Oreille, Idaho. The results of this testing allowed an informed choice of several propulsor designs, reducing risk that the propulsor will meet its stringent noise goals. Testing is ongoing for Main Propulsion Unit prototypes, reactor coolant pumps, reactor plant valves, and steam generators. The test program has allowed us to identify deficiencies and correct them now without impacting ship delivery schedules.

The AN/BSY-2 program also has an extensive testing effort designed to minimize the risks of this ambitious development. Critical item tests of beamformer intergrated circuit performance, wide aperture array performance and flow noise, outboard electronics modules, and display shock and vibration have been completed, and a program of other critical item tests is ongoing. Solid requirements definition, software development and exhaustive testing using MIL-STD-2167, strict control of ship interfaces, extensive use of commercially available software tools, band a strong independent verification and validation effort complement the testing to control risks in this program.

The test efforts for both SSN-21 and AN/BSY-2 are central to minimizing risk in these programs. The slowdown in SSN-21 procurement must not be mirrored in reductions in the SSN-21 and AN/BSY-2 RDT&E programs. These programs must be seen to completion as currently budgeted to support the completion of the lead SSN-21 with a minimum of risk. Reductions in these programs now would serve to increase the risks for the SSN-21, and raise the possibility of costly changes that would have to be made to SSN-21 late in construction or after at sea testing. Prudent total program risk reduction dictates that continuation of the RDT&E program is the most cost effective approach in the long term.

Although testing and management attention are key elements in controlling costs, we also need to look at the role that acquisition strategy will play in keeping costs down. We should strive to maintain competitive pressures on our shipbuilders as they downsize to adjust to reduced building rates. These pressures will work against uncontrolled costs increases at the shipbuilder. With our limited building rate, we must try to preserve critical design and production capabilities taking into account both the cost of individual contracts and the benefits that may be accrued by long term competitive pressures. Last year, this committee expressed concern that the procurement rate selected by the Major Warship Review could be inconsistent with plans to establish a second source for SSN-21. The committee report on Defense Appropriations directed the Navy to reassess its current strategy and adopt the most cost effective plan. The report directed that the fiscal year 1991 ship be competed.

The Navy has complied with the direction received from the Congress last year. On November 21, 1990, we issued a Request for Proposals (RFP) for the fiscal year 1991 ship to both Electric Boat and Newport News Shipbuilding. The RFP contained a provision allowing for consideration of a mobilization base award to the second source if conditions comparable to those of the lead ship contract were met. Proposals were received from both shipbuilders on January 8, 1991. The source selection process is continuing, and it would be inappropriate for me to provide you details on this specific competition.

However, I would like to discuss some general considerations that will clearly play as the Department of Defense and the Congress try to reconcile a minimal procurement rate with preservation of the industrial base. We need to honestly face the fact that long term procurement of only one submarine per year will not sustain both submarine construction yards. We also need to face the fact that Soviet submarine construction continues unabated, and that recent developments in the Soviet Union make one wonder whether we may be headed back to an era of greater tension. In such circumstances, it is prudent to retain the capability to produce large numbers of submarines for as long as we can. I do not know how long this capability can be retained. In the end, fiscal pressures may require us to move to a single submarine builder, but I do not believe that we should prematurely dispense with the design and construction expertise of either submarine builder.

The reduced building rate also has a severe impact on the submarine vendor base that supports those yards. This vendor base has already shrunk significantly, with recent losses of manufacturers for nuclear fuel, reactor cores, nuclear pipe and fittings, and neutron detectors, as well as non-nuclear components. We must be careful not to let the remaining vendors slip away, since their expertise has taken decades to develop, and could only be replaced with great difficulty and at significant cost. This year's budget requests $375.5 million for advanced procurement for SSN-21 components, including $331.7 million for nuclear components. It is imperative that this funding be approved—we are down to sole suppliers for many items, and many of these suppliers rely solely on the Navy for their orders. Last year's Appropriations Act deleted virtually all new contract work for our nuclear component manufacturers. I strongly urge you to support this year's request.

Competitive forces will be a major factor in adjusting the nuclear shipbuilding industrial base to match the reduced workload we currently project. We are taking both cost and the industrial base into consideration as we evaluate the fiscal year 1991 SSN-21 procurement, and as we plan ahead. We will try to make the best choices consistent with the national interest.

In conclusion, Mr. Chairman, I would ask that you fully support the SSN-21 and AN/BSY-2 funding requested in the President's budget. This funding supports efforts that will bring a vastly more capable submarine to the fleet in this decade, a submarine that must be produced to pace the threat. They are receiving management attention commensurate with their importance, and incorporate testing on an unprecedented scale to reduce risks. I will keep you informed as we proceed with efforts to define a new submarine concept. I ask your understanding as we try to deal flexibly with a submarine construction and vendor base that is under extreme stress, and thank you for providing me a forum to discuss these important topics.

Senator WARNER. Thank you very much.

Now, gentlemen, I would like to just preach a bit. It was 22 years ago that I had the privilege of serving in the Department of the Navy, and I have watched through these many years the manner in which the United States finally determines the budget allocations to the three military departments, and it is then allocated to the four services, adding in the Marine Corps.

There seems to be three principal forces that shape the budget of a military department. The first is the budget of the United States, and there, as we face considerable problems associated with deficit spending, I use the presumption that the forces are co-equal on each of the departments. In other words, if we have to scale down and cut back, the assumption is that we should in an equal way apply the budget pressure from the national budget.

The second is plain old politics, and it is politics here on Capitol Hill and it is politics in the Pentagon. Anyone who does not think there is some politics in the Pentagon ought to have the privilege of serving there for a few years.

Senator MCCAIN. I am shocked.

Senator WARNER. That is right. Stand by for the next one.

The third force, and it is the one that I think we have to keep coming back to time and time again, is the threat to the security of this country and our allies and the nature of that threat. As the Chairman has enunciated—and the Chairman and I have planned this series of hearings—we start at initially the threat briefing and go through the evolution to get back to the focus on the military departments.

Curiously, this year the Secretary of Defense—and the reason that I could not ask the question of him is that he appeared here before the principal ground element thrust of the Gulf campaign got under way. Now that that has been concluded, I point your attention—and I am going to address the question to Secretary Stone—to a quote by General Schwarzkopf, in which he is alleged to have said that he has, that is the U.S. forces together with their allies in the Gulf has, "turned the fourth largest army in the world into the second largest army in Iraq."

So I now come to: What is the threat that faces the United States and its allies that should help us configure the size of the U.S. Army, so that we should continue to have X number of divisions with heavy equipment? What is that threat?

Before you respond, I can, with greater clarity, see the threat that configures our naval forces and the threat which configures our high tech air forces. I must tell you that I want to explore in this hearing, and subsequently, what is the threat that says, roughly, the Department of the Army should take one-third of the budget, give or take a point or two——

Mr. STONE. I will take that point right away.

Senator WARNER [continuing]. And that compels us to continue with this basic allocation of one-third, one-third in the years to come?

Mr. STONE. Well, I tried to address at least a part of that, Senator Warner, where I was talking in my introductory remarks about emerging realities and enduring realities, without going into all of them in detail, because the whole subject of the threat is a very lengthy one, a very involved one, as of course you know.

Senator WARNER. But nevertheless, that should be the principal force that configures the budget allocations amongst the three military departments and in turn the configuration of our forces. If there is to be a change in that configuration, based on my experience of 22 years, it is going to come from Capitol Hill, because I doubt seriously whether the executive branch, given the uniqueness of the politics in this business, can ever impact a reallocation in a significant way among these three departments.

It has got to come from Capitol Hill.

Mr. STONE. I will see if I can answer your question in the briefest way. Obviously, the budget that is before the Senate was prepared largely last year, prior to all of the action in Southwest Asia. But nevertheless, it does reflect a very careful, detailed, specific, involved discussion of the threat that took place over a 3-month period in the late summer of last year and the early fall.

In the hearings that I have had up until today before other committees of both the House and the Senate, I have been asked a similar question. If I may repeat what I said there, I think it at least gets to the heart of your concern.

As Secretary of the Army, Congressmen and Senators have asked me, "Could the Army do again in 1995 what the Army was able to do as its share of all of the Armed Forces' contribution in the Middle East?"

My response, and I think General Vuono's response has been the same, is: "Yes, we could do it with the force structure that is reflected in the budget that is before you. There are two caveats to that. One is that we might not be able to do it as quickly as we would like; and two, we might not have the flexibility that we would like. But yes, we could conduct a Desert Storm again in 1995 with the forces that are anticipated to be available at that time."

Senator **Warner**. Now you are coming right to the point. Show me the threat in terms of land armies against the United States in 1995 that justifies the continuation of this substantial land force that we now have and are projected to fund and have in the future?

Here is an interesting fact. If you look at the land forces—General Schwarzkopf's statement prompted me to go back and do this research—China has the largest army; the Soviet Union the second; India, curiously, the third; North Korea the fourth; the United States and Turkey vie for sixth place, depending on whether you add the Marines into the Army or how you run that calculation. The United States and Turkey are fifth and sixth.

Then Vietnam, then South Korea, and the ninth is Pakistan. At some point we have got to figure out where is that threat and those series of scenarios that justify the continuation of a very substantial U.S. ground force element.

Mr. **Stone**. Well, I do not think your question really wishes to raise an issue just of the numbers game, because we are playing here with a scenario that looks at capabilities as a whole, rather than just the number of people in uniform. Some of those countries have significant capability. The number of countries that have ballistic missiles is growing rapidly, as you know.

Senator **Warner**. That will be my next question. On the second round, I am going to come to that. I am just trying to project the threat into the future and as that threat impacts the budgets of the military departments.

Time does not permit. My time has stopped here. We have to get, I think, greater impact upon the military departments as a consequence of this threat picture, because we could awaken some day to the misfortune of having just an imbalance within our capability overall to meet the threat that is most likely to impact the U.S. security or that of our allies.

Thank you, Mr. Chairman.

Chairman **Nunn**. Thank you, Senator Warner. Senator Levin.

Senator **Levin**. Thank you, Mr. Chairman.

First let me add my thanks to each of you for the role that you played in the recent brilliantly executed operation of our Armed Forces. Our country is in the debt of each of you.

The Commanders have asked for more conventional B-52Gs. As I understand it, they played a very important role. I think, Secretary Rice, you indicated that the B-52Gs in the conventional role played an important role in recent events. The first question to you is, why are we accelerating the retirement of the B-52Gs that were dedicated to the nuclear role?

Why not instead transfer them to a conventional role?

Mr. RICE. Senator Levin, we have looked at the balance of the requirements of heavy bombers we can maintain under START and at affordability issues and concluded in the net of all of that that we are going to have to reduce the heavy bomber force.

We do expect to have provisions under START that would allow us to increase, if we decided to do so, the number of dedicated conventional heavy bombers. Our program calls for holding that number constant to the 33 that we have left after we in fact reduced a squadron at congressional direction last year.

Then we decided to also take advantage of the flexibility that is inherent in that force structure and to put up, at modest cost, on the B-52Hs a range of conventional capabilities that will be pretty nearly comparable to the capabilities the dedicated B-52, dedicated conventional B-52s will have, that will allow us to phase out the ALCM carriers.

Senator LEVIN. What do we save per squadron by phasing out in an accelerated way the B-52Gs?

Mr. RICE. I will be happy to get you specific numbers on that, Senator.

[The information follows:]

B-52G ALCM SQUADRON

The average yearly cost savings associated with retiring a generic ALCM B-52G squadron is roughly $90 million; only half of that is realized in the first year of retirement due to retirement costs. The fiscal year 1992 President's budget includes the accelerated retirement of the ALCM B-52G fleet.

Senator LEVIN. All right. Is it mainly a fiscal matter, rather than a START-driven matter?

Mr. RICE. It is a combination of the two.

Senator LEVIN. On ICBM modernization, we are going to have four options here by the end of the 1990s. We will have the option of taking the MX mobile off the shelf. Presumably it will have been proven by then. Are we going to test fire one and then put it on the shelf?

Mr. RICE. One test shot, yes, sir.

Senator LEVIN. We will have that option, to take it off the shelf. The second option will be to put the Midgetman in silos. A third option will be to put the Midgetman on a mobile launcher. The fourth option will be to continue the upgrade of the Minuteman IIIs.

Can you tell us when in the 1990s you think we will have to make that decision as to how we want to modernize and which of those four options we want to pursue? Just give me a date, if you would? Middle 1990s, late 1990s?

Mr. RICE. I believe, given the current budgets, we will have to make a decision before the middle of the 1990s about the Peacekeeper Rail Garrison system. I am not sure how long that will really retain true viability on the shelf. We are okay through 1992 and 1993, but beyond that I think we are going to have to look at that year to year.

Senator Levin. Do you think we will have to make that decision prior to the completion of the development of the Midgetman launcher, the mobile launcher?

Mr. Rice. In the absence of any additional resources, we probably will. Some modest additional resources should allow us to keep that option open longer, and we have not attempted to estimate that number yet.

Senator Levin. You have made reference to START. Is it our view as it is currently outlined that the START agreement is in our national security interest?

Mr. Rice. Yes, sir.

Senator Levin. Secretary Stone, you in the past have been a personal supporter of the retrofit program for the M-1 tank. Indeed, we put funds in for that program last year.

Mr. Stone. That is correct, Senator.

Senator Levin. Did you personally recommend to the Secretary of Defense that retrofit program for the M-1?

Mr. Stone. I discussed it with the Secretary, Senator. I think it would be a better way, if I could present it this way, to say that the Army institutionally presented it and it was discussed and it was finally eliminated as an affordability issue.

Senator Levin. Do you personally continue to believe that that program would improve the capability of our current tank fleet?

Mr. Stone. Well, if I could elaborate a little bit on that answer, and I will try to give you a very specific answer on it. I would like to perhaps say a few things for the record.

It gets into the issue, of course, that Senator Warner raised, and that is the threat. The Army today has approximately, and this is a very general figure, but approximately 8,000 tanks in its inventory. We would like to keep that fleet of tanks as modern as we can.

It is important, I think, for the committee and the Senate to understand that the U.S. manufacturing capability in tanks today consists of three different programs. One would be a program for the U.S. Army, which is continuing for another 2 years. Second, a program to manufacture tanks for overseas customers, and that is going on presently until at least 1996. And then third, there is technology work for the development of our future series of tanks, what we call the Armored Systems Modernization Program, one of whose components is the Block III tank.

So those three programs all comprise the work that is going on today in our industrial base at the two plants in the United States that have the capability to produce tanks. To come back to the Senator's question as to how I personally feel about the tank upgrade program, in principle, I would support anything—and again, this relates also to Senator Warner's question—I would support anything that gives the Army and therefore the United States a better warfighting capability.

A program to upgrade either the older series of M-1 tanks or M-1A1 tanks would certainly do that, and therefore, I would support it. Indeed, I would repeat that the Army did put some funds behind that in its initial budget submission.

The problem that we have is partly related to the total production that is going through the plant. It is very difficult to pin down what the cost of that program of upgrading the tanks to a higher standard would be. But in principle—and I apologize for this long answer—certainly the Army did support that. However, it was not able to sustain that support as a result of what was deemed an overall affordability problem.

Senator LEVIN. Thank you.

My time is up, Mr. Chairman. I would only urge that the other services also address the issue of threat that Senator Warner has raised. There is a changing threat in the world which affects all of the services' plans, not just the Army. I think that it is incumbent on all of the services to address that change in the threat, not now because my time is up, but at some early point.

Chairman NUNN. Thank you, Senator Levin.

Senator McCain, now we will call on you. I have got to step out now for an appointment with the Norwegian Ambassador.

Senator MCCAIN. Can I take about 20 minutes?

Chairman NUNN. No, I was going to ask you and Senator Wirth to use your own sense of equity.

Senator MCCAIN. That means I am down to 3.

Chairman NUNN. The only admonition is to keep the witnesses here long enough, because I have not asked my questions yet, and I will be back in about 10 minutes.

Senator MCCAIN. Thank you, Mr. Chairman, and your sacrifice is not going unnoticed. We are very grateful.

Senator WIRTH. 10 minutes. That gives you 2.

Senator MCCAIN. Thank you, Mr. Chairman.

I would just editorialize a little bit on the business of the threat. We need to assess it. I am in agreement with Senator Warner and Senator Levin, but I would suggest that if 5 years ago you assessed the threat, the Iraqi situation would not have been on the scope. We have to be very careful when we make those assessments.

I would like to make a few comments and ask some questions. First of all, Secretary Stone, you were in the Middle East about the same time that I was. We have incredibly high morale amongst those men and women who are there, but that morale is in great danger right now in my view because they believe, correctly, that the war is over. They do not know when they are coming home.

Let us give them a schedule and make them sure that there is a schedule for people returning, and let us give some priority to those reservists and guardspeople, particularly reservists, that were called up involuntarily, or those who volunteered because we were in a crisis.

I am convinced that if we do not give them some surety, recognizing, as we all do, that there is still not a formal ceasefire, that we are going to have a morale problem unless those people have some kind of assurance of a schedule when they can come back home. I do not envision, nor do I believe you do, that Saddam Hussein is going to mount some kind of attack against U.S. forces in the area.

In the Reserves we have doctors and we have many professional people who are losing literally their professions as they are serving over there. I cannot emphasize that enough to you.

Second of all——

Mr. STONE. May I just interrupt to endorse your comment, Senator. At a briefing that I had very early this morning, I saw that out of 10 overseas deployed units, 8 of them I think—and do not hold me to that number, but it was 7 or 8 of the units—were medical units and were scheduled to come home within the next 48 hours.

So we are trying to do it as quickly as possible.

Senator McCAIN. People are your product, and I think you have got to get a message out to them, too, that you are concerned, it is your priority, and that they understand that.

Mr. RICE. Yes, sir, we are all working on that.

Senator McCAIN. In the conversations I had with them, a lot of them, I found they had not gotten the message.

Second of all, Secretary Garrett, battleships did play a crucial role, especially in one incident around Kuwait City Airport. I think we have got to look, to carefully evaluate the retention of the battleships.

One of the areas that I bring to your attention again in lessons learned is the provision of timely intelligence information to the battlefield commanders. This has been brought to your attention. I do not know what the answer is particularly. I think maybe in retrospect, maybe the SR-71 decision was not a good one. But, that is clearly one of the lessons learned, and we do not want to overlearn lessons from this war or any other war.

Secretary Rice, last year the General Accounting Office tried to stop, or strongly recommended, procurement of jammers, the ALQ-184 and ALQ-135. Do you remember that?

Mr. RICE. Yes, indeed.

Senator McCAIN. I have forgotten their rationale, but because they were not adequately tested or something like that. It is my understanding that those jammers played a very crucial and lifesaving role in this last campaign. Would you agree?

Mr. RICE. Yes indeed, I would agree. They worked very well.

Senator McCAIN. So again, GAO was incorrect in their assessment of the capabilities of that equipment?

Mr. RICE. I think, Senator, they were pointing to detailed ways in which some of the testing had not yet satisfied all of the specifics that were laid out in the test plan. That turned out not to be all that relevant to their ability to perform their job in a real combat situation.

Senator McCAIN. If we had taken GAO's recommendation, our losses would have been higher?

Mr. RICE. Well, there is no way of knowing that, but certainly the risk would have been greater and that would be what professionals would project.

Senator McCAIN. Secretary Stone, the Apache, in the words of General Schwarzkopf, was superb. Would you agree with that?

Mr. STONE. I would say the performance of the Apache was everything that I, for the last 4 years, have suspected that it was capable of doing, and I will sign up to General Schwarzkopf's remark, yes.

Senator McCAIN. Thank you.

Secretary Rice, the C-17, is it going to meet its June 1991 date?

Mr. RICE. The first flight date has been set at the end of June and holding for 18 months now. I have said, and I will say it again here, in response to committees from the Congress that we are highly confident it will fly this summer. With a date set right at the end of June, I do not want to sit here and tell you, yes, it will fly in June. It has been holding that schedule for quite some time now, but we are confident it will fly this summer.

It is important on all the first flights that we not let anybody rush them to meet an arbitrary date. That is the schedule we are managing against, but the airplane should in fact go into the air when all of the considerations are in hand, safety and otherwise, for that.

Senator McCain. Secretary Garrett, many naval aviators believe that with the cancellation of the A-12 that we really do not have a follow-on or replacement. I hope you will provide us, perhaps in writing, with what you propose.

Also, I think clearly the A-6 again proved that it is an incredibly important asset and one which, at least in my view, the F/A-18 is not an adequate replacement. I hope you will keep us informed on that issue.

Mr. Garrett. I certainly will, sir.

[The information follows:]

Let me begin by saying that medium attack is the cornerstone to carrier aviation's capacity to meet the full spectrum of the Navy's traditional power projection missions. That is why filling the medium attack requirement, the AX program, is the number one priority for naval aviation. We anticipate that a request for proposals, for AX, will go out to potential bidders in the July 1991 timeframe. However, as you realize, it takes a long time to field a major program, such as AX, and in the interim we are taking the steps necessary, with the SWIP upgrade program, to assure that the A-6 remains a fully capable, survivable aircraft through 2000. We will, of course, look at other potential upgrades to maintain the A-6 until the AX IOCs after the turn of the century.

Senator McCain. You recognize that is a very high priority issue?

Mr. Garrett. Naval aviation is one of my highest priorities, Senator. We need to get that straightened out and get on a course upon which we can stay.

Senator McCain. With these continued personnel reductions, I would request that you would give the committee in writing, in not a lot of detail, the efforts that are being made to consolidate commands which have redundant duties. I know that is something you have been working on, but I would like for you to keep the committee up to speed on that if you would.

Mr. Rice. Senator, the Air Force did provide the committee a letter on February 4 that detailed a significant number of those kinds of streamlining, consolidation, overhead reducing initiatives that we have been taking in the Air Force. I would be happy to provide you a copy.

Senator McCain. Thank you. You do not have to. I will get a copy of it if they were provided. I thank you.

Secretary Rice, we got a little bit of bad press about the diversion of a flight from Desert Storm. I am sure you are looking into that.

Mr. Rice. Yes, we are looking into it, and we believe we have all the information in hand. We are continuing to make sure. There was not much right about that newspaper article. There were no marines on that flight, to start with.

Senator McCain. That explains it. [Laughter.]

Mr. Rice. The general involved was doing a tour that was part of his official duties. He was responsible for that Desert Express operation. That is our kind of Federal Express. It was a cargo airplane. Anyone flying on it was on a space available basis.

The general involved consciously throughout all of his travels elected to go when and where there was an airplane already scheduled to go. That airplane went where it had been previously scheduled to go, though there does seem to be some question about whether all of the folks who hitched a ride on it understood all of that.

There was no diversion of the aircraft, no improper actions whatsoever on behalf of the general, as best we have been able to determine. And the soldiers involved were Air Force security guards who elected to get off, and I understand—and they did elect to get off. And I understand they found a C-5 hop that got them through one stop in the United States right to Tyndall Air Force Base, which was their home station.

Senator McCAIN. We have a few minutes left in a vote, and if it is agreeable to you we will take a recess until Senator Nunn returns.

I would just like to make one other comment in keeping with my duties on the Manpower and Personnel Subcommittee. It is becoming totally clear to me that we cannot meet these end strengths that we had previously laid down, and I look forward to working with you as we readjust perhaps some of our funding and some of our priorities, because I do not think that we can reduce the size of any of our services to the degree which we envisioned.

The waiver for this year I know provides you with some comfort, but it still just bow-waves the problem on down the line. I believe that as a result of any conflict in which we are engaged we do not overlearn those lessons, but at the same time we do not ignore them. I think some of them indicate that perhaps there should be some adjustment of priorities, particularly by keeping qualified men and women in the service that we need to perform certain vital functions. I know that is one of your primary responsibilities, and I look forward to working with you on those issues.

Mr. STONE. Thank you.

Mr. RICE. We will be happy to work with you on them, Senator.

Senator McCAIN. Thank you very much, and the committee will stand in recess until such time as the return of the Chairman, which I am sure will be in a few minutes. Thank you all.

[Recess.]

Senator WIRTH [presiding]. Gentlemen, thank you very much for coming back. I really appreciate it.

Secretary Rice, maybe I could start by asking you to respond to the general state of Research and Development in this defense budget over the next 5 years. As I read the numbers, after 1992 the R&D budget will decline 1 percent in 1993, 6 percent in 1994, 10 percent in 1995.

What we are going to be doing is spending more money on engineering development during this period of time and on new production than we are in basic R&D.

This appears to be a major shift away from basic R&D. The question is what is the rationale for that de-emphasis on R&D over the long term, if in fact there is that de-emphasis? What is the rationale for that and does that make sense?

One of the things you and I have talked about in the past is maintaining a robust defense industrial base. How can we do that with that kind of a sharply declining R&D budget?

Mr. **Rice**. Senator Wirth, are you asking or citing numbers about the total DOD budget or the Air Force budget?

Senator **Wirth**. Well, it is the total DOD budget, but a great deal of that falls into your baliwick.

Mr. **Rice**. I am just looking at a table here that has the proportion of our budget, which I realize does not quite, since the budget is declining in real terms, deal with the issue that you are raising. The Air Force budget declines in percentage terms slightly in 1992 and 1993 and then rises throughout the FYDP in terms of the amount in RDT&E. Now, that's little "d" and big "D" both, and so that would have to be sorted out.

We have tried in the Air Force program to look quite consciously at the tech base and to try to be sure we have provided adequately for it. We think we have done so, particularly in the early years of the FYDP, and we may still have some work to do on the out years.

How much we have there is complicated by two major programs which are significant fractions. One is SDI. The Air Force does not have that money appropriated to it, but our tech base, our laboratories, execute a significant portion, of course the space-related part of the SDI activities.

The other program is the National Aerospace Plane, which is separately budgeted as a separate line item, but it represents a significant amount of the moneys available for tech base kind of activities in the Air Force.

When you take both of them into account, my recollection is when we looked at it in putting the budgets together that we are able to sustain, certainly through the early years of the FYDP, about a constant level of effort for our tech base. There is some uncertainty in that because it depends on how much flows through from SDI and that number alone could swing a few percentage points in what happens to our tech base.

Senator **Wirth**. The concern that I have is——

Mr. **Rice**. That is only the Air Force portion.

Senator **Wirth**. I understand.

If you take out the engineering development and you take out the new production and go right to the basic research, that is a declining share of the pie, and that would suggest to me some significant danger signs down the line.

Mr. **Rice**. When I talk about that tech base, I mean to be referring to the 6.1, 6.2, and 6.3A portions of the RDT&E budget, which is beyond basic research, but short of specific major systems development.

Senator **Wirth**. Why do I not send you, if I might, the analysis of basic research and maybe get you and your colleagues to respond. This probably should go to the Secretary and then to the three of you. But so much of this is in your backyard.

Mr. **Rice**. I will be happy to help organize that kind of review any way I can be helpful, Senator Wirth.

Senator **Wirth**. Thank you.

Mr. RICE. I would point out, when you refer to the three of us, you do need to remember that a significant portion of the DOD tech base is outside the military departments today, because, of course, of DARPA and because of the SDI Office.

Senator WIRTH. Let me send a letter to you on that topic. Maybe I could ship some of the questions to you and perhaps have it organized in whatever way you think a response might be most helpful.

Mr. RICE. Fine, Senator.

Senator WIRTH. If I could turn a minute, Secretary Garrett, to the question of the D5 and the Trident. It is my understanding that what we have done in this budget is to cancel further production of the Trident, and yet we are, as I understand it, at the same time seeking funding to upgrade the missiles on the existing Tridents to D5s. Is that correct?

Mr. GARRETT. That actually is not in the present budget. The D5 backfit program has been deferred, based primarily upon affordability considerations, to just outside this particular Future Year Defense Plan. That was a part of our program and had been all along, but we have for affordability reasons been forced to delay, not cancel, our plans to upgrade those missiles.

Senator WIRTH. And how long a delay is this?

Mr. GARRETT. That is very, very difficult to predict, obviously. What we are looking at is probably some time in the mid-1990s. The original plan always was to upgrade these missiles and the capability of the platform when they came in for their refueling overhaul, because it made the most sense from a cost effective point of view. We may have to delay that in the context of one or two of the earlier platforms.

Senator WIRTH. The C4 is the current missile that is on the Trident, is that right?

Mr. GARRETT. D5s are now deployed as well, but the first group of Tridents that are west coast boats do not have the D5 missile.

Senator WIRTH. What percentage of the warheads that are on Tridents are C4s and what percentage are D5s?

Mr. GARRETT. I would like to provide that to you for the record if I may, sir.

[The information follows:]

[Deleted.]

Senator WIRTH. The reason that I am asking the question relates to the future of the Rocky Flats nuclear weapons plant, which as you know has been scheduled by the Department of Energy to be phased out.

Mr. GARRETT. Yes, sir.

Senator WIRTH. And the question is how rapidly it gets phased out and what national security requirements are fulfilled by Rocky Flats?

Mr. GARRETT. Yes, sir.

Senator WIRTH. That would delay its phasing out or might speed its phasing out. That is what we are trying to figure out with the communities there and with DOE. Obviously, DOE takes the order from DOD as to what it is that they have to do, and the question is whether there a pressing national security concern to convert C4s to the D5s and, if so, when does that occur, when does that conversion occur?

Mr. GARRETT. Well, of course we are in the process of doing that. I thought you were directing your question to those that have not been converted in previous years and that we were going to do in a planned way, which as I said, has now been deferred.

But I would be happy to answer that question for you for the record and answer whatever detailed questions you may have.

[The information follows:]

The priority accorded to the production of W-88 warheads needs to be addressed in the context of their contribution to the Nation's strategic capability. Trident II (D-5) missiles with W-88 warheads do not replace an existing capability. Rather, they add the ability to hold the full spectrum of Soviet targets at risk from a survivable and enduring platform, capable either of prompt execution or of being withheld almost indefinitely. The Navy fully supports Secretary Watkins' plan to restore the Rocky Flats Plant to operation in a safe and deliberate manner to serve as an interim production facility pending the ultimate restructuring of their weapons production complex.

Senator WIRTH. Would you do that.

Mr. GARRETT. Yes, sir.

Senator WIRTH. You see where we are.

Mr. GARRETT. Yes, sir.

Senator WIRTH. Obviously, nobody wants to intervene in any kind of national security path if in fact that has been defined as something that is of high priority need and interest. But if it is now slipping to a lower priority and, in fact, the C4s can be used for an extended period of time, then the pressure is off, is off Rocky Flats to restart. You are of course as familiar as we are.

Mr. GARRETT. Well, as to the submarines that are currently in construction—and we went on contract with the last Trident, which was the 1991 Trident—it has always been planned that those submarines would be outfitted with the D5 missiles, not C4s. So that is a pressing, continuing need as we go forward.

The issue as to backfitting the preexisting submarines is going to relieve the burden somewhat, but I do not think it is going to change the nature of what we are doing as it relates to the balance of the ships coming into the fleet.

Senator WIRTH. There are currently warheads coming off of submarines that are being decommissioned, is that not right, that could be put on the Tridents if in fact Rocky Flats could not open?

Mr. GARRETT. If in fact we cannot get from here to there, we do have certain work-arounds, yes, sir.

Senator WIRTH. Good. Well, I would like to give you a set of questions on that. We are trying, as I say, to program this out, where is the urgency and where is not the urgency, and from the perspective of this committee and of the Energy Committee how much funding do we provide to the Department of Energy to build a replacement for Rocky Flats.

Mr. GARRETT. Yes, sir.

Senator WIRTH. It is coming eventually, but should we accelerate that early on so that we can move to meet those long-term security needs?

Mr. GARRETT. We will be happy to work with the committee closely to answer your questions, Senator Wirth.

Senator WIRTH. Great. I appreciate it.

Mr. Chairman, I have one other question I want to ask, but my time has expired.

Chairman Nunn [presiding]. Go ahead, Senator Wirth.

Senator Wirth. Thank you very much.

One of the questions that I wanted to ask you if I might, Secretary Stone, relates to the disposal of chemical weapons. I know that you spend a good deal of your own personal time looking at various alternatives and strategies for this. As you know, we have at PDA, the Pueblo Depot Activity, a significant number of chemical weapons stored that are going to—under treaty are going to have to be taken apart in some way, shape or form.

The question is what technology ought to be used, and if that is done at PDA, is there a possibility of developing a technology there that is going to be perhaps more of a closed system than might exist elsewhere? And if in fact we make that investment at PDA to do that, might that be used for other weapons systems as well?

That is kind of the line of questioning.

Mr. Stone. Well, you have opened up a subject, of course, that is of great importance to the United States in every part of the country where chemical weapons are stored. There are two different technologies that we are looking at primarily now, and I am talking to your committee as a whole now, rather than to you, because I suspect you know some of these details yourself, and maybe the committee does as well.

But the baseline technology that was developed at Tooele, Utah, is now in operation in Johnston Island in the Pacific, and that is the principal technology that we are looking at for the destruction of all of the chemical weapons in the United States.

Senator Wirth. You are saying in operation. Is that operating now or is it being built now?

Mr. Stone. No, it is in operation now. I thought you were going to ask that question slightly differently, but I guess I had better correct it for the record. We are in what is called the OVT stage of the plant. It has been classified as operational verification testing, and there is a series of munitions that is being put through the plant.

We have finished successfully the first phase of the OVT sequence, and we are now changing over to a second munition. So the plant specifically is not operating today. Just before it shut down, it had its record week in terms of total rockets destroyed of the particular type of weapon that was being used then, and we consider that a very successful sign. We are now switching over, as I say, to the second munition.

The other technology that we are looking at is the one that is called cryofracture, and there has been some congressional direction regarding that program. We are following that direction. Some of the permits that pertain to that development work have been late being issued and therefore the program at Tooele to implement the cryofracture next stage is a few months behind schedule. We are implementing that program as well.

So a year from now perhaps at this testimony, I will be able to answer your questions a little bit differently, because I think we will have two technologies to look at then, to see which one is the best in all that word implies, and second, which one can be employed in different areas, which gets back to your Rocky Flats question.

Senator **Wirth**. On the cryofracture issue—the two, the Johnston Island technology and the cryofracture technology, to use kind of a shorthand for those, are now competing in a sense with each other as to which one is going to be used?

Mr. **Stone**. Yes. I am not sure that "competing" is really the right word. It may turn out that there are two different applications and that one is better for one kind of chemical weapon and one is better for another.

I was a real skeptic on cryofracture for a long time, and I am still not convinced that it is a technology that we can successfully employ in the Army. But we are taking the steps to find that out. We have a pilot plant that is being designed now, and we have some very important tests coming up now, the ones that I referred to a minute ago which are covered by the RCRA (Resource Conservation and Recovery Act) permits, by the end of this year.

Senator **Wirth**. What are the possibilities—say we are going to have the de-mil of the chemical weapons done in Pueblo in some fashion using one technology or the other. What are the possibilities of having one of the demonstration plants done there, or are those already in train to be done at Johnston Island and being done at Tooele?

Mr. **Stone**. I think that we have notified Congress that we intend to complete the destruction of chemical weapons at eight different sites, and those sites are in varying degrees of development. We have actually started the second plant, I think, which is at Tooele. The third one I believe is at Umatilla in Oregon, and we are doing preliminary engineering work on that one. That leaves five to go. I do not think all of the final decisions have been made on the location of those plants, but that is the position in the Army today.

Senator **Wirth**. We have an interesting and somewhat anomalous situation at Pueblo as well. On the one hand, the earlier Base Closing Commission did not have the authority to reach to the end of the responsibilities that Pueblo has, so Pueblo stays open beyond the authority of the Base Closing Commission.

Add on top of that the very complicated environmental issues that remain there. We have no idea, you know, what has been stored there, what has been dumped there. Probably one of the best ways is to get a lot of the guys who worked there over the last 40 years to come out and say: Oh, I remember where and when we did that.

It is a pretty difficult situation. It would appear to me that, given the toxic liabilities that the government has, that that is going to remain in government hands for a long time. PDA is going to be a government responsibility for a long time to come.

If that is the case, then how do we go about in a more benign fashion continuing to make use of that facility? One of the issues is chemical de-mil. Another one, and I will close with this, comes out of the Pershing burns several years ago. PDA was one of the two places, you will remember, in which the Pershing engines were burned and then cracked.

I was in Pueblo to observe those burns a couple of times. There were some terrific officers there from the Army who were responsible for doing this, and we watched this process where they were burning rocket motors right out into the atmosphere, with all of the incumbent problems. You just sit and watch all this burning occur, and we were all looking at that and saying: How much sense does this make? One, should there be a closed burn facility? Two, if we are seeing this with Pershings, are there not going to be a whole generation of other weapons that are coming back that are going to have to be destroyed as well?

Maybe we ought to be looking at more of a closed burn facility. The Chairman very kindly put into the authorization at one point the beginning of an examination of this, and you all have increasingly funded that. We are going to be looking at what are the other needs going to be of de-militarization and the destruction of various weapons and so on.

Mr. STONE. We have no decisions that have been made within the Army in that longer phase, and we will be happy to work with the committee, Senator, in any way that you would like on the matter.

Senator WIRTH. I would really appreciate that. We are having a meeting out there with some of your people in a couple of weeks, with a variety of the technical people in the areas, to look at these questions and options and sort of trying to understand a little bit better the long-range future of the PDA.

Mr. STONE. I think I am due out there myself next week or perhaps the week after. I know that I am going to Tooele. I am not quite sure that I am going to Pueblo, but if I am not, I will try to add it to my schedule.

Senator WIRTH. It is on April 4. We may well talk to your scheduler and see if we can get you to vector into Pueblo. We are going to have, I think, a pretty interesting selection of people there——

Mr. STONE. I would be glad to try to do that.

Senator WIRTH [continuing]. To look at this set of issues, which I know you have spent a lot of time looking at yourself, and it is a very complicated long-term issue.

Mr. STONE. We lost the Chairman again.

Senator WIRTH. We lost the Chairman again.

Secretary Rice, would you sketch out for us, maybe now or maybe for the record, what your plans are for the advanced warning system?

Mr. RICE. Senator, let me tell you where that stands. I think I mentioned earlier we owe the committees a more up to date statement on just where we are on that system. We have canceled, terminated, the BSTS program. That was the surveillance satellite, as you remember, that was started as part of the SDI program.

That was transferred over to the Air Force, though not with all the dollars, last fall. That program has been terminated. We have in the budget now a sustainment of the DSP program with some modest additional resources to explore the possibility of technical enhancements, upgrades, to the DSP.

That, the whole question of how we ought to proceed in this advanced warning system mission area is one that is being relooked under Don Atwood's leadership inside the Department now. We expect some time this spring, hopefully fairly soon, to come to the committees with an updated view of how we think we ought to proceed in that mission area.

Senator WIRTH. We will look forward to receiving that information.

Just finally, I want to tell you how we appreciate the work of the Air Force with the strategic environmental research program and how that applies at Falcon Air Force Base, where there is a very, very significant computer capability that is used about half-time, and how might it be applied to other very, very complex modeling work that demands that sort of capability.

Mr. RICE. Okay, sir.

Senator WIRTH. So we appreciate your help on it. Thank you very much.

Thank you, Mr. Chairman.

Chairman NUNN [presiding]. Thank you, Senator Wirth.

Let me just ask a few questions on closing. A number of mine have already been answered by each of you.

Secretary Rice, last year the Congress directed the Air Force not to proceed with full scale development of the ATF for fiscal year 1991. The reason for this was the major aircraft review which we received was very limited and failed to examine possible alternatives.

Yesterday, General McPeak said that the Air Force wanted to proceed with full scale development in June and would like for us to waive that requirement. Our concern was and is that signing such a contract will be used later to tie Congress' hands and force us to commit to the ATF, even if there are other alternatives that might appear to be more feasible and more cost effective.

I am a supporter of the ATF, but I believe in not committing until we know what we are actually buying.

My question is this—if the Air Force does sign a full scale development contract this spring, do you believe this constitutes a commitment to develop the ATF? Does it bind our hands where we really won't be able to do much about it if we go that far?

Mr. RICE. Mr. Chairman, the hope, the reason this is in fact a significant issue is because the commitment to full scale development is a major step of commitment to any program. On the subject of the alternatives, however, we are conducting a study of the alternatives, and the contractors who have a special interest in them are contributing very strongly to that effect. We expect to have the review of the F-15 derivative and the F-16 derivative alternatives completed and available to the committees this spring, in time for your review alongside our proposals as we come out of the source selection and the Defense Acquisition Board review of the milestone permission to start full-scale development.

We will have all that together for you. We don't have the final results of those studies yet. But I think, realistically, what we are going to find is to get a major derivative of the F-15, it is going to cost a significant fraction of what the ATF will cost. It's going to take nearly as long to get, and is going to have a very hard time meeting the low observable requirements that are so essential to sustaining the air superiority capability out to the next century.

Chairman NUNN. My own instincts tell me that that is correct and that is probably where we will be heading. The question we have to grapple with is if we weigh that prohibition and if we allow you to go forward, are we going to get that analysis in time so that we can understand what the choices are before you have already gone forward with full-scale development?

Mr. RICE. Our objective is to get it to you in time. My understanding is that those studies are on a schedule that will permit that.

Chairman NUNN. Okay.

The second question is also for Secretary Rice.

I talked to General Pagonis when I was in the Persian Gulf before the ground war started. I talked to him at length on the question of airlift and sealift. The job it did was unbelievable—getting a huge amount of cargo to the Persian Gulf in a short period of time.

I think the Military Airlift Command deserves a great deal of credit for that, as well as the sealift.

We are concerned over the longer term, however, about the implications that the deployment may have on the maximum capability, particularly regarding the C–141.

Secretary Cheney, referring to the C–141 fleet, told the committee earlier this year that, "We are flying the wings off of them."

General McPeak yesterday said the C–141 had "tired wings."

Even if the C–17 moves forward according to the latest Air Force plan, airlift capability will drop in the mid-1990s, according to my understanding.

Is that correct?

Mr. RICE. No, sir. I don't believe that's correct.

Our program calls for replacing the oldest C–141s 1-for-1 with C–17s as the C–17s come off the production line.

I think, because of a problem of a few very old, worn out ones, there are about 20 C–141s that come out of the force early. And so, it takes a little, tiny dip in the 1992–1993 period. But then, as we get the first 20 C–17s delivered, that is more than recovered; and as the C–17s come in, they replace C–141s 1-for-1 and they actually improve the total airlift capacity as each of those replacements is done.

Chairman NUNN. Of course, the C–17 program has been disappointing in the sense that it has not kept to timeframe. There are many of us who are skeptical that that is going to turn around completely, although I hope it does.

My real question is, are we going to go through a period where we really have less airlift in the next few years because of the combination of the C–141 problems and the possible C–17 delays to where we have less airlift than we do now?

Mr. RICE. We will lay out the details for you. The program we endeavored to put together would not let that happen except for this little blip in the near-years, which I mentioned, having to do with 20 of the very old C–141s that we think we ought to take out early as part of some realignment of the force structure.

In fact, the program costs were enhancing our airlift capability with the C–17. We will keep the youngest, lowest time aircraft from the C–141 fleet after the end of the delivery of the C–17s.

Chairman **Nunn**. We note that the contract award for the fiscal year 1990 aircraft, the so-called Lot 3 on the C–17, has been deferred, pending further review by the Acting Secretary.

It has been scheduled for award in December 1990 or January 1991.

Has this review been completed? That was the original schedule—December, 1990/January, 1991. Has the review been completed, and when can we expect that the contract will be signed?

Mr. **Rice**. It has been pending, both the review which now is completed and the successful negotiation, from the Air Force's point of view, of a deal with Douglas Aircraft on Lot 3. On both of those the review is complete, the negotiation is essentially complete, and we expect to proceed with an additional substantial obligation of funds and the definitization of that Lot 3 contract this spring.

Chairman **Nunn**. What can we infer in our committee when we are making our decisions about the health, or lack thereof, of the C–17 program now?

Mr. **Rice**. What I would say about the C–17 program is I would ask you to think about it in two categories.

From a technical point of view, since the program schedule was reset back in 1989, the program has come along very well indeed. It has stayed on schedule. It has met the internal technical milestones. The problems that we were having with the software in a couple of areas after that got turned over to different contractor teams to work on, all that has come along very well.

The problem that we have continued to have is that the contractor put a work force in place excess to his needs, and he had built up an operation with an overhead rate that we thought was out of line.

We had been working with him and he has been working on bringing that work force and that overhead structure down to what we think, and he would agree, is a more appropriate level, to sustain the level, to support the level of production that the Congress has provided funds for and that we're able to support in the future.

He's still on the track, coming down to that. How far down he can get is the question that is still open and that still leaves some uncertainty that you read about in the newspapers as to how big his overrun is going to be on development and Lot 1 and Lot 2. Whatever it is, that's his egg to swallow.

We think we have negotiated a fair price and a good arrangement for Lot 3. We have a few little details to work on before it is public information. So we think the program overall will make it through the difficult time it has had.

The critical event is first flight this summer and we hope that all goes well.

Chairman **Nunn**. Are you looking at any fallback options, if this does not work out on the optimistic side? For instance, going back and doing some upgrading to the C–141 fleet?

Mr. **Rice**. If something catastrophic happened to the C–17 program, we would, of course, have to go back and take another look at that.

As you may be aware, that in itself is a very expensive program. The estimates run $12 billion or more to do what the so-called SLEP, Service Life Extension Program, to the C–141s would do.

What we would get out of it doesn't look like a very good buy. It would extend the life only long enough that we would have to start a new C-17 program today in order to have it ready in time to pick up from even the extended life C-141s.

Chairman NUNN. Do you have any other fall-backs? Is anybody looking at what it would cost to go back and build some C-5s?

Mr. RICE. The various committees have asked us that question and that option is being looked at.

Chairman NUNN. You are taking a look at that?

Mr. RICE. Yes, sir.

Chairman NUNN. Well, I hope the C-17 works out. I have been convinced by all the services over a period of time that it would add a great deal to our airlift capability. If we continue to have problems, I think we have to have some fall-backs.

Mr. RICE. No doubt, Mr. Chairman.

Chairman NUNN. I don't think we can afford to bring forces home from around the world and have a reinforcing strategy which is essentially what the administration is talking about, which I agree with, and then at the same time see our airlift go down.

Mr. RICE. The key events are an affordable price for the follow-on lots, and we think we have that just about in hand, and a successful first flight and test program sometime mid-summer.

Chairman NUNN. Are we going to know by mid-summer?

Mr. RICE. Certainly by the end of the summer, in terms of having to have some time to fly.

Chairman NUNN. All right.

Secretary Garrett, I understand you have become concerned about the longer-term affordability of our naval forces, specifically asking your staff to begin the design of a cheaper attack submarine.

Is that right?

Mr. GARRETT. That is correct, sir.

Chairman NUNN. Admiral Kelso stated in his testimony yesterday that, "The fiscal realities of the 1990s have made the development and acquisition of affordable weapons systems and platforms an increasingly important factor in sustaining our maritime strength."

I assume you agree with that?

Mr. GARRETT. Yes, sir.

Chairman NUNN. Can you share with us your view of the long-term affordability trends in the Navy?

What broad directions do we need to take now in order to maintain modernization without jeopardizing the future force structure?

Mr. GARRETT. One of the reasons I asked Admiral Kelso and Mr. Cann to look at this is that I firmly believe, Mr. Chairman, we do need to find more affordable ways to apply evolving technologies. I think it is absolutely critical that we continue to evolve technology that we have been working on for many years.

The problem that I see, of course, is that, as the top line—and this applies to all of us, I think—continues to descend, unit rates go up to a point where we simply cannot buy.

So one of the things that I have asked to be done within the Department of the Navy is to look extremely carefully at the marginal increase in performance that everyone seems to want, which is a product of the process that we have had ongoing for many years—and to step back and perhaps accept a lesser performing platform, yet still continue a modernization program. But we can't continue to buy that extra 2 percent for a 15 percent to 20 percent increase in price.

Chairman **Nunn**. I agree with that philosophy. I think we have to look at the last 2 percent of sophistication in terms of cost, and I think we have to look at using technology also to reduce cost.

Mr. **Garrett**. Yes, sir.

Chairman **Nunn**. This year I am going to be looking into how we can use our considerable technology to channel into more efficient and quality controlled manufacturing. Perhaps you all might be able to submit for the record some information on this subject.

I think we have to take technology and use it not simply for sophistication, which is important, but also for efficiency, effectiveness and maintainability in the field. That last 2 percent sometimes gets completely out of whack.

Mr. **Garrett**. Yes, sir.

Chairman **Nunn**. I think you found that out in your recent A-12 program.

Mr. **Garrett**. But those are very difficult lessons to learn. I understand the impetus at the outset. You know, when some of these programs, like the submarine development programs which take 10 to 13 years to develop, they want to insure—because it is sort of a mindset—that you are only going to get one chance, so let's make sure that we cover all bases. I understand that desire on the part of the operator. But, we have to provide much more careful oversight, from both the civilian as well as the uniformed side, as we develop our requirements and identify those that are unaffordable at the outset.

[The information follows:]

Manufacturing Technology

ARMY

The Army MANTECH program funds the application of proven science and engineering technologies to the solution of manufacturing problems. The MANTECH objectives are to increase the quality of manufactured products, increase worker safety, decrease production and ownership costs and increase the competitiveness of the industrial base. The Army MANTECH program encompasses 12 technology thrust areas and is funded as shown in the following table.

Thrust area	Fiscal year 1991 funding	Fiscal year 1992 funding
Single Issue Tasks	$4.565	$2.908
Chemical Processes	5.145	3.249
Electronic Manufacturing	5.817	2.937
Manufacturing Process Controls	1.572	1.333
Environmentally Acceptable Processes	2.250	1.253
Optics/Electro-optics	2.479	5.186
Non-Metalic Materials	3.500	3.339
Metals	1.350	0.853
Total Budgeted	$26.678	$21.058

The MANTECH funds are applied to generic manufacturing problems which impact across programs. They are not applied to the specific individual program manufacturing problems. In this way the limited MANTECH funds can be focused on achieving manufacturing solutions which have high return and broad applicability throughout the industrial base. Funding is leveraged and project duplication among services is eliminated through cooperative efforts with industry, academia and other government agencies.

As an integral part of every Army development program, each PM funds activities specifically applicable to their program which are designed to improve reliability, quality, maintainability and producibility. Army initiatives also encourage (1) use of concurrent engineering for up-front consideration of reliability, maintainability, quality, producability and life cycle cost, (2) early design stability to reduce redesign, scrap and rework, (3) early prototypes and tests to impact design when it is most cost effective to do so, and (4) system level testing on equipment produced manufacturing processes. Although not individually quantifiable as cost per program, these and like Army efforts focus technology to achieve more efficient, higher quality manufacturing processes.

AIR FORCE

The Air Force has three programs that channel technology into more efficient and quality controlled manufacturing, and increase the efficiency, effectiveness, and maintainability of already-fielded systems. They are the Manufacturing Technology (MANTECH) program, the Productivity, Reliability, Availability and Maintainability (PRAM) program, and the Reliability and Maintainability Technology Insertion Program (RAMTIP).

The MANTECH program is part of the larger Air Force Industrial Base Program (IBP). Through the IBP the Air Force assesses the status of the industrial base and identifies potential shortfalls and bottlenecks, incentivizes contractors to invest in industrial modernization, and operates Air Force Government-Owned-Contractor-Operated industrial plants, as well as conducts manufacturing R&D.

MANTECH is the only concentrated manufacturing R&D done by the Air Force. It develops manufacturing processes that determine product producability and affordability, and transitions advanced product designs into producible, high quality, cost effective weapon systems and components. Through contracts with industry and academia, MANTECH funds innovative, high risk, generic manufacturing processes and systems beyond what the government can reasonably expect industry to fund themselves. By emphasizing R&D on generic manufacturing processes with wide applicability, MANTECH benefits a wide variety of Air Force and industry requirements. The program also contains efforts specifically in support of the Air Force's need for modernized repair and maintenance requirements.

The objectives of the Air Force MANTECH program are to:

— Achieve increased productivity, cost reduction, and quality improvement in the manufacture of Air Force weapon systems

— Demonstrate advanced technology to modernize manufacturing, maintenance, and quality assurance in Air Force systems

— Integrate the MANTECH program with major weapon system acquisition to ensure the utilization of the most beneficial technologies and

— Improve the readiness, capability, and sustainability of Air Force weapon systems.

The Air Force MANTECH program encompasses 10 technology areas and is currently funded as shown:

[Dollars in millions]

Technology area	Fiscal year 1991	Fiscal year 1992	Fiscal year 1993
Airframe Production and Productivity	$7.345	$7.175	$10.515
Low Observables Manufacturing and Production	0.000	0.000	0.000
Propulsion Systems Production and Productivity	4.892	1.765	3.997
Electronics Integration and Assemble	12.780	4.856	15.544
Maintenance and Repair Productivity	7.900	8.025	8.800
Computer Integrated Manufacturing	21.512	13.449	22.892
Strategic Missile and Launch System Production	3.238	3.100	1.716
Tactical Systems Manufacturing and Production	0.550	0.800	2.700
Space Systems Manufacturing and Production	3.720	2.035	1.656
Manufacturing Science	6.051	5.438	6.977

Technology area	Fiscal year 1991	Fiscal year 1992	Fiscal year 1993
Program Support	4.145	4.300	4.300
Total Budgeted	[1] $72.133	$50.943	$79.097

[1] Congress appropriated an additional $40 million for specified projects.

The Air Force MANTECH program is coordinated with the other military departments, industry, and academia to avoid duplication of effort and leverage scarce funds. The MANTECH program has over 80 active contracts with all segments of industry. Since its beginning MANTECH has made numerous contributions to the defense industrial base especially in the areas of numerically controlled machine tools, carbon-carbon rocket nozzles, organic composites, near net shape metal processing, integrated computer-aided manufacturing, and automated non-destructive evaluation. MANTECH projects average a return on investment of greater than 12 to 1. Recent projects have established an engine manifold cleaning and rejuvenation system that eliminated the hazardous waste products and resulted in a savings of $2.2 million per year. Another project provided automated assembly and test techniques for the infrared sensors used in the Sensor Fuzed Weapon reducing costs of the sensor by half and increasing the production rate from 10 to 400 per day.

The PRAM program is a quick reaction program to correct reliability and maintainability problems in fielded weapon systems and equipment. PRAM reduces current and future support costs and improves the effectiveness of Air Force operational systems, subsystems, and equipment by facilitating the adaptation and implementation of off-the-shelf technology.

[Dollars in millions]

	Fiscal year 1991	Fiscal year 1992	Fiscal year 1993
PRAM	$20.0	$24.4	$25.6

PRAM has 132 active projects with audited returns on investment averaging 16 to 1. Since its creation in 1975 PRAM has initiated 960 projects resulting in over $16 billion in cost avoidances. The PRAM program has just completed testing and qualification of a vastly improved electronic equipment coolant that is ready for immediate use on the B-1B, F-15, EF-111, P-3, F-14, and F-18. The new fluid eliminates a major safety hazard and reduces equipment failure rates. Its use on the B-1B alone will yield a $41.6 million cost avoidance in the first 5 years.

The RAMTIP effort is a technology transfusion and risk reduction vehicle for Air Force system program managers. RAMTIP is tasked to improve the reliability and maintainability of fielded, in production, and future systems by accelerating the development and transition of emerging technologies from the laboratory to the implementation phase.

[Dollars in millions]

	Fiscal year 1991	Fiscal year 1992	Fiscal year 1993
RAMTIP	$17.0	$21.0	$24.9

RAMTIP currently has 15 active projects with projected returns on investment of at least 16 to 1. RAMTIP's On-Board Inert Gas Generating System (OBIGGS) has entered production on the C-17 transport. OBIGGS provides nitrogen gas to inert the C-17s fuel tanks reducing the chance of fuel vapor explosion if the tanks are damaged. C-17 cost avoidances are estimated at $38 million through the elimination of the costly ground support infrastructure required to perform this task today.

The investment in these three programs continues to provide significant payback in capability, productivity and savings. These programs become even more important in our future fiscal environment. MANTECH, PRAM and RAMTIP are all key elements to the success of the Air Force DMR initiatives.

Chairman **Nunn**. Secretary Rice, I hope that we have not gotten into that with the ATF. I hope we are not loading it up so much that it will sink of its own weight.

Mr. **Rice**. Quite the contrary, Mr. Chairman. We have had affordability goals in that program from the beginning. We have been through now almost a 5 year so-called demonstration/validation phase with prototyping, with hardware demonstration in the avionics, with new engines actually flying in those prototype aircraft. All through that process, the Air Force has been through a necking down, a trade-off of the early list of requirements to those which we think are both achievable and affordable. That is the burden that is on us, to demonstrate, as part of the process of showing, that the program is ready to enter full-scale development.

Chairman **Nunn**. What is the current timeframe for making decisions on this ATF program? What is your best guess?

Mr. **Rice**. We are due to make the source selection by the end of April, then bring that information through a Defense Acquisition Board Milestone II review. That should take on the order of a month or a month and a half.

So, sometime in late spring we should be at the real decision point to commit to full-scale development.

Chairman **Nunn**. Secretary Stone, the Army looked at your charts where you showed all the personnel moves that you've had in the last 6 or 8 months and those that are anticipated. Of course, it is an incredible moving of men and women in uniform all over the world. It is a real job in personnel management.

You are now in the process of having to redeploy some 300,000 soldiers from Saudi Arabia and release about 150,000 reservists and 20,000 active soldiers who were involuntarily retained on active duty through what you call, I believe, the Stop Loss Policy.

What timeframe do you have in mind in completing this redeployment and deactivation of reservists? I know that every member of the committee and Member of Congress is getting a lot of phone calls from families and so forth. This would apply also to the Navy and Air Force, so I will ask this of each of you. I know it certainly depends on what progress is made.

Assuming we make progress and get a ceasefire agreement nailed down in the next couple of weeks, what timeframe is the Army working on in terms of bringing the forces home? Are there any comments you would like to make about how you are going about deciding forces that may go back to Europe versus forces that were in Europe that went to Saudi Arabia that may come directly home?

Mr. **Stone**. You have asked quite a number of questions there, Senator, and if I miss one, come back at me with it.

I think the most important part of my answer would be to repeat the President's target. He has said publicly that he would like to see the Army and I think the entire armed services make as much progress as possible toward a goal of having the forces back in this country by the 4th of July. That is a little more than 3 months out, and certainly the Army is using that as a planning target.

Of that 300,000 total that you mentioned a moment ago, we will make substantial progress, given no resumption of political problems that we have to continue to address in a military way. We will make very substantial progress in achieving the President's goal.

Now, there will be some people who have to stay for an indefinite period—we have not quite calculated how long that will be—to do the final wind-up in Saudi Arabia.

Chairman NUNN. Do you know the number of people that are going to have to be over there for quite a long time?

Mr. STONE. I believe that the recommendation is being made to the Commander in Chief, General Schwarzkopf, this week. So we ought to have that figure very shortly. But I do not have it today.

[The information follows:]

SWA RESIDUAL FORCE

The final status of the SWA Residual Force has not been determined. There have been competing proposals from the various headquarters in the region from the Joint Staff, and from the Army Staff; the proposals have been discussed at every level, including the JCS Executive Session, at OSD, DOS, and NCS, but there are no firm decisions as of this date.

Chairman NUNN. Are you talking about tens of thousands or are you talking about thousands? What is the general number?

Mr. STONE. I think that some of your colleagues, Senator, could confirm what I am going to say. One of the things that I saw there last week was very little civilian labor in the Eastern part of Saudi Arabia. All of the stevedore gangs in the ports went over to the West side, and we are not sure when they are going to start to come back. All the civilian cargo moving into Saudi Arabia is moving through the west coast ports. Until they come back, we have nothing to work with in the port of Dhahran, for example, other than Army soldiers to load the vessels.

If we can turn some of that work over to contract stevedores, we will be glad to do that, and that will probably help us to get that total down more rapidly than we think we can today.

So it is difficult to answer your question that precisely.

Chairman NUNN. How about reservists? What is the policy on reservists? I know a number of Reserves are support forces, and the expectation is probably that the Reserves will come home first. Some of them are in critical tasks for the reloading situation, are they not?

Mr. STONE. They certainly are, and I would like to say for the record that they have done an absolutely marvelous job. We have mobilized a little over 1,000 units in the Army, in the Reserves. Over 600 of those units are in Southwest Asia, and a large number of them, as you correctly state, are in the port management and transport servicing area. Some of them have been there a long time, since last August.

There are several solutions to it. One of them is the contract stevedore solution that I mentioned a minute ago. A second one is to take over some part of that responsibility with the regular forces. A third solution would be necessary as those units that have been there longest reach the end of their statutory time. We might indeed consider the possibility of rotating those units either with Active component forces or with Reserve component forces.

No final decisions have been made yet.

Chairman NUNN. Approximately when will the military be able to tell the families when they could expect their loved ones home? I know that's tough. Will you be able to give them some idea in the next 30 to 40 days, in that timeframe?

Mr. STONE. I would think, barring any adverse political developments, that we certainly ought to have that schedule ready for public dissemination, Senator. Yes.

Chairman NUNN. Some time about the middle of April?

Mr. STONE. Within the next 30 days.

Mr. RICE. Mr. Chairman, in the Air Force case, it is a matter of when the units are released from any further need for them in the command over there. As you know, we are still flying combat air patrols and some other things in support of what's going on.

Chairman NUNN. Right.

Mr. RICE. We already have a schedule of a number of units coming home, Reserve and Active, out through much of April, as I remember. Just as quickly as units are released, we get them into that schedule.

In fact, we have the easy part of it. It's relatively easier to bring the Air Force units home, certainly more than the ground force units. We can let the people know pretty quickly and give them pretty firm dates as soon as the units are released from the command's needs over there.

Chairman NUNN. Secretary Garrett.

Mr. GARRETT. We, of course, likewise respond to the needs of the Central Command. As they release our units, we will bring them home. What we are striving to do, Mr. Chairman, is return to what we have established as our personnel tempo and our operational tempo, which is 6 months away from home and then home for a year. Of course, many of these units have already surpassed that. As we speak, those units that have been over there the longest are coming home.

It's clear from the Secretary's position on this matter that some naval forces will remain in that area and will not be coming home, or will not be home by July 4. That does not mean that there won't be new units to replace those that are there now.

Chairman NUNN. So you'll have a continuing Navy presence, as we have had for many years?

Mr. GARRETT. That is correct. We will try to get back to a rotation that our people can live with.

Chairman NUNN. Secretary Rice, have you all decided in the Air Force about how much prepositioned equipment you will have so that you can role planes back in there if there is another contingency? Is that being negotiated with Saudi Arabia and the allies?

Mr. RICE. That is part of what is being worked on with the countries over there.

We had a substantial amount of prepositioning in the theater, as I think you are aware, before this happened, which was enormously valuable to our ability to make this deployment.

We need to get an assessment of how much of that is salvageable and could be put back in storage and how much of it is just flat worn out, based on what it's been through, and will need to be replaced.

That is one part of the job. Then the other part of the job, of course, is securing the agreements with the countries out there as to how much can be put in place.

That is part of the objective.

In addition to that, the question is being looked at, without a resolution yet, what form of enhanced, if any, land-based air presence should we have in the region. It could be anything from more frequent exercises with those local air forces with whom a much stronger relationship has been established during this or rotational deployments or some form of permanent presence. Those options are all on the table, and the Air Force can support whichever one the President and the Secretary of State work out with the leaders in the region.

Mr. STONE. Mr. Chairman, may I pick up on Secretary Rice's point just to reinforce one matter?

Chairman NUNN. Yes.

Mr. STONE. Obviously, to the extent that there is a political decision which is made by the United States to leave equipment of various sorts in the area, that diminishes the requirement for the Army and all the other services to load equipment out through the ports.

Chairman NUNN. Right.

Mr. STONE. That will affect our time schedule significantly.

Chairman NUNN. Right.

Secretary Garrett, a final question. Admiral Kelso said yesterday before this committee that, "Our helicopter and surface mine counter measure forces have made great strides, but new mine technology is proliferating rapidly."

Do you agree with that?

Mr. GARRETT. I do in general, yes, sir. Mines are very cheap weapons.

Chairman NUNN. Can you tell the committee why the Navy has proposed to get rid of 40 percent of the mine sweeping helicopter capability this year by retiring Reserve squadrons, and they have also proposed to rescind the 12 new mine sweeping helicopters Congress authorized and appropriated last year?

Mr. GARRETT. Well, the proposal to rescind was really driven by the decision not to get rid of that capability, Mr. Chairman, but to return that capability, that is, bring it into the Active force. The decision to bring those squadrons into the Active force led our legal counsel to tell us that we could not obligate those funds for the purpose for which they were authorized and appropriated—that is, for the Reserves.

What we are trying to do, basically, is enhance our capability in the Active forces, based primarily upon our experience during Operation Earnest Will, where we needed immediately to bring to bear those mine-hunting capabilities, and our experience in Desert Storm and Desert Shield. That is the direction in which we are heading.

Chairman NUNN. Did the Navy not this year, in the Desert Storm/Desert Shield, mobilize large numbers of reservists? Also, didn't you use these reservists in Desert Storm/Desert Shield?

Mr. GARRETT. Are you talking about in our mine sweeping?

Chairman NUNN. Yes.

Mr. GARRETT. Yes, sir.

As you know, over the years the MSO's, those that were built back during the 1950s, have essentially been in the Reserve force. We brought those into service.

Chairman NUNN. Wasn't that a success this year?

Mr. GARRETT. Well, we have learned a lot over the last 3 years, Mr. Chairman, both in Earnest Will as well as in this process. I think that what we have been doing now for the last decade—that is, the investment that we have been making in our mine counter measure ships and our coastal mine hunters and, hopefully, in the future, in our mine hunter variant—will in large part address the shortfall that we have experienced for a number of years.

Chairman NUNN. Are you plussing up the Active squadrons?

Mr. GARRETT. Well, only those two Reserve squadrons, where the proposal was to return them to the Active force, that is, the 53s. That was my understanding.

If I am incorrect in that, I will correct it for the record.

Chairman NUNN. I'm not sure I understand why you're doing that. Are you doing it because the Reserve concept hasn't worked with the mine sweeping?

Mr. GARRETT. Oh, no, no. The point is this was, at least in Desert Shield/Desert Storm, the first time that we have exercised the President's authority for the Reserve call-up to the degree that we have. Now during Earnest Will we actually used some Reserves to man the MSO's. But they were all volunteers. We asked for volunteers and they came forward. They volunteered, and we used those assets during that 2 year period.

This time, of course, we called up Reserves as a function of the statutory provisions, the President's call-up. What I was looking toward in the future was being able to utilize those assets without a need to either seek volunteers or to have the Reserve call-up.

Chairman NUNN. Now that's going to cost more money, isn't it?

Mr. GARRETT. To have them in the Active forces? It will cost a moderate amount more. Yes, sir.

Chairman NUNN. Well, of course, I guess we could take that position on everything in the Reserves that you do there. I mean, I'm not sure what is unique about this.

Why can't you leave them in the Reserves? I thought that had been one area where the Navy Reserves had been utilized for the last 15 years pretty successfully, and we had just proven it worked. Moving in the other direction it seems to me is the opposite of what we have learned.

Maybe I am missing something here.

Mr. GARRETT. Well, let me, if I may, sit down again with the CNO, discuss the issue with him and get back to you, Mr. Chairman.

Chairman NUNN. I am sure there is something here. I just don't quite get it, because I had been talking to the Navy and others about finding ways that you can move more to the Reserves for economical reasons, and I know you're trying.

Mr. GARRETT. Yes, sir. We're trying to do that.

Chairman **Nunn**. I know you have the nesting concept now, which I talked to Admiral Kelso about yesterday, and you are moving forward on that one.

Maybe you could give me a call after you discuss that again.

Mr. **Garrett**. I'd be happy to.

I'm going to have lunch with him this afternoon and I'll call you back this afternoon.

Chairman **Nunn**. Good.

Are there any other closing comments, things that we should have pointed out or questions that you wanted to receive and didn't get?

Mr. **Garrett**. No, sir.

We appreciate the support. We are obviously in for some very difficult times, more difficult than we thought last year or the year before. So it is not going to be an easy course.

Chairman **Nunn**. Our bill, as passed, has relieved the end strengths for 1991 and left that up to you all. We still think it is advisable to try to do what you can this year because it will make the task over the next 5 years easier. We are letting you make that choice.

Mr. **Garrett**. We continue in the Department of the Navy on the path that we set out, and we hope to be back on course in 1992 without any difficulty.

Chairman **Nunn**. Thank you all for being here. We appreciate again your excellent service.

Mr. **Garrett**. Thank you, Mr. Chairman.

Mr. **Stone**. Thank you, sir.

Mr. **Rice**. Thank you, Mr. Chairman.

Chairman **Nunn**. Thank you.

[Questions for the record with answers supplied follow:]

Questions Submitted by Senator Sam Nunn

FORT BENNING/CITY OF COLUMBUS, GEORGIA LAND EXCHANGE

Senator **Nunn**. Secretary Stone, one of the provisions of the National Defense Authorization Act for fiscal year 1991, section 2829, authorized the Secretary of the Army to enter into a value for value land exchange between Fort Benning and the City of Columbus, Georgia. I was pleased to have the cooperation of the Department of the Army in enacting this provision. As I understand it, the land exchange will provide the post additional training and maneuver areas in exchange for land which is now only used as a buffer between the post and the community. For the community's part, the exchange will provide a badly needed opportunity for industrial development. Because of the predominance of federally owned real estate in the region, land which can be used to expand the economic base of the community is in very short supply.

Late last year, the Army advised that even the preliminary steps to effect this exchange such as an environmental assessment, would be held in abeyance because of a very broad interpretation of a moratorium by the Secretary of Defense on significant land acquisitions. The Army advised my staff that it was going to pursue a waiver of this moratorium as it related to the Fort Benning land exchange and asked my support for that endeavor.

In early January, I wrote to Deputy Secretary of Defense Atwood supporting the Army's waiver. Recently, I received a reply from Mr. Atwood in which he advised that no such waiver had ever been sent by the Army and, therefore, the request was denied pending receipt and evaluation of such a request.

Secretary Stone, can you please advise me on the Department's position on this matter. Does the Army support pursuing this land exchange on an expedited basis? Has the Army submitted a waiver request to the Office of the Secretary of Defense? If not, why not?

Secretary **Stone**. The Army supports an expedited land exchange provided it benefits both the Army and the City of Columbus. The Army has not had the opportunity to discuss this proposal with the city and ascertain if the topography and location would be beneficial to Army training. The Army submitted a waiver request for the Fort Benning land exchange on March 21, 1991. The Department of Defense has responded with a request for maps and property descriptions for each parcel, along with a discussion of the effect of the exchange on the installation's mission.

INDUSTRIAL BASE

Senator **Nunn**. General Powell laid out several "central military strategic concepts" in testimony before the committee this year. One of these was "reconstitution," which he described as "maintain the capacity to reconstitute a large, effective defense capability, if the need should arise." Each of your departments faces problems in this area, with a defense plan that shuts down armored systems production, drastically reduces fighter aircraft production, and cuts back on ship and submarine production. Secretary Stone, Secretary Garrett, and Secretary Rice, would each of you outline how your department's budget reflects General Powell's "reconstitution" concept, which obviously requires a strong industrial base?

Secretary **Stone**. The Army's budget and program reflects the current domestic fiscal situation that demands reductions in Federal spending, yet we believe captures the thrust of General Powell's "reconstitution" concept. The term "reconstitution" can best be characterized in terms of three elements: industrial production, mobilization planning, and force regeneration as it relates to the Army's biennial budget. These elements protect what the Chairman believes should be preserved: "infrastructure, stockpiling critical materials, protecting the defense industrial base, investing in basic science and high-payoff technologies, and constituting Reserve units adaptable to activation as the mission dictates."

First, the department's budget and program maintains the technology base to promote development of leap-ahead capabilities that will exceed any projected enemy capability. Procurement appropriations slow the acquisition pace of improved, modern systems as the Army is leveraging for the future with an emphasis on the Research and Development accounts. Research, development, and acquisition programs will provide for improved warfighting capabilities in armor, anti-armor, deep attack systems, aviation, forward area air defense systems, and command and control. With respect to the Army's tank program, the President's budget funds no U.S. tank procurement beyond fiscal year 1991. Under this program, new tank production for the U.S. Army ends in 1993. New tank production for the Army is not scheduled to begin until 2001 with Block III fielding in 2003, the centerpiece of the Armored Systems Modernization Program. In the intervening years anticipated foreign military sales are expected to provide a measure of protection to the industrial base for tank production, Patriot, and Multiple Launch Rocket System. We will be producing ammunition for war reserve in the future, and some ammunition plants are being put in a layaway status and maintained for possible future production needs or mobilization.

Second, mobilization planning calls for the full political support for military/industrial mobilization. Military manpower availability will be under the levels of mobilization including Presidential Selected Reserve Callup, partial, full, and total mobilization. The President's budget envisions certain reserve forces being maintained in cadre status. These units would have greatly reduced manpower and training but the equipment to facilitate an efficient transition to full strength is needed. We currently plan for two cadre divisions in the Army. A final determination as to whether or not the cadre concept will be adopted has not been made.

The Army recognizes the criticality of preserving the heavy armor industrial base as I mentioned in our industrial production element to reconstitution.

Finally, force regeneration is a subset of reconstitution. The Army is conducting an assessment of force regeneration requirements based on actual operation Desert Shield/Storm experiences and the constraints of various reshaping initiatives.

I have described for you in rough outline the Department's budget which reflects General Powell's "reconstitution" concept. The budget continues our transition to a versatile, deployable, lethal, but smaller Army.

Mr. **Garrett**. The concept of "reconstitution" as outlined by General Powell requires us to protect our defense industrial base as well as the basic infrastructure to support our forces with a "broad, and enduring foundation of industrialization, mobilization and sustainment to allow us to rebuild and regenerate new forces . . . as an important element in our ability to deter aggression." The Navy has always believed that a strong and responsive U.S. defense industrial base is essential to national security and acts as a "basic deterrent." This requires the maintenance, expansion and readiness of our defense industrial base to produce systems efficiently and effectively in peacetime and rapidly expand output in a national emergency.

The Navy recognizes the need for industrial preparedness planning and actions to overcome production shortfalls. To accomplish this we conduct Production Base Analyses to assess industrial base capability. Our goal is a Navy industrial base capable of supporting the materiel requirements of our strategy. Our budget supports efficient competitive peacetime production, maintenance of a warm production and support base, and preparedness planning for indefinite wartime sustainability.

Specifically, in regard to shipbuilding, Mr. Gerald Cann, the Assistant Secretary of the Navy for Research, Development and Acquisition, personally conducted a review of surface combatant shipbuilder's programs. The results highlighted the serious impact current budget levels for shipbuilding will have on the industry and the adverse effect that the loss of major shipbuilding facilities would have on national security.

To more fully understand the problem and to determine how to most effectively make industrial base decisions, on March 5, 1991, Mr. Cann initiated a study of the Shipbuilding Industrial Base. Overall responsibility for the analysis was given to the Deputy Assistant Secretary of the Navy (Ships) who will be assisted by the Commander, Naval Sea Systems Command with the support of all necessary Naval Sea Systems Command program managers.

The purpose of the study is to analyze the Navy's ability to support the shipbuilding industrial base and provide a basis for maximizing effectiveness of industrial base decisions when they are required and allowed. Since the current level of shipbuilding defined in the FYDP may not support the industrial capability necessary for the Navy to meet its long range shipbuilding goals, the results of the analysis will ensure that industrial base requirements are considered along with operational requirements in future efforts.

The study will specifically address the current shipbuilding industrial base and its capacity, as well as the projected utilization given current and projected Navy shipbuilding programs. It will also assess the continued viability of the current base at projected utilization rates and discuss acquisition, modernization and repair strategies that should be considered to maintain a core industrial capability. Finally, it will provide appropriate recommendations to assist in developing acquisition strategies for future procurements.

Secretary RICE. Currently the Air Force funds approximately $190 million a year on a variety of actions aimed at increasing the industrial base capacity during a time of crisis. These range from the Manufacturing Technology program designed to improve manufacturing processes, techniques, materials, and equipment to the Industrial Preparedness Planning Program allowing for rapid expansion of capacity.

In recent years, fiscal constraints have limited our ability to achieve industrial preparedness requirements. However, with the advent of reconstitution as a central military strategic concept, we will now be able to better focus our limited resources on more achievable goals. OSD, the services, and the Joint Staff are incorporating this new concept into major planning documents such as the Defense Planning Guidance and National Military Strategic Document. As industrial planning is based on guidance from these documents, their revision will shift emphasis from sustaining and expanding the current force toward reconstitution. Their publication will also allow us to better identify our industrial based shortfalls and necessary investments.

ACQUISITION REFORM

Senator NUNN. The committee understands that various extraordinary acquisition had to be used to ensure that front line forces in the Persian Gulf got adequate weapons and supplies. Secretary Stone, Secretary Garrett, and Secretary Rice, did Operation Desert Shield/Desert Storm highlight the need for any changes in emergency acquisition procedures to make them more effective in future contingencies?

Secretary STONE. Yes, Operation Desert Storm/Desert Shield did highlight the need for the suspension or deferment of certain procedures and practices that are not essential during periods of mobilization or other contingency operations. Such authority would decrease procurement administrative lead time and expedite contracting for essential supplies and services. The Federal procurement statutes contain provisions which impede the Department of the Army from effectively performing its procurement mission during such emergency conditions.

Current procurement laws presently do not permit modification or suspension of certain provisions during national emergencies or other contingency operations declared by the President. For example, the Competition in Contracting act establishes competition requirements for the award of contracts. Although the law permits exceptions in case of urgency, lengthy and complex justifications must still be prepared and approved after the fact requiring the use of valuable personnel resources. Also, the use of undefinitized instruments, such as letter contracts, is an ideal way to award contracts quickly. However, it is virtually impossible to comply with the statutory time frames for definitization, given the potential volume of such awards that could occur in a prolonged conflict of troop build-up. The time frames should be waived for contracts awarded during national emergencies.

Secretary GARRETT. Most of the extraordinary acquisition procedures used were those in existence prior to Operation Desert Shield/Storm. For example, the Competition in Contracting Act (CICA), as implemented by the Federal Acquisition Regulation (FAA) and DOD FAR Supplement (DFARS), contains procedures to facilitate the award of our contracts when conditions of unusual and compelling urgency are present. These procedures include the ability to contract without providing for full and open procedures, as well as providing an exception to the requirement to publicize our procurements in the Commerce Business Daily before issuing a solicitation. The FAR and the DFARS also permit the award of letter contracts which provide the contractor preliminary authority to begin immediately manufacturing supplies or performing services. Letter contracts are used when a definitive contract can not be negotiated in sufficient time to meet the requirement. Finally, as a part of the National Defense Authorization Act for 1991, the Congress raised the threshold for the use of simplified procurement procedures from $25,000 to $100,000 for purchases outside the United States in support of Operation Desert Shield.

In summary, we believe current emergency acquisition procedures are in place to effectively support any future contingencies. However, in the event of any such contingency, we recommend that the Congress again authorize the use of a higher threshold for simplified procurement procedures. This higher threshold should also be expanded to include purchases both within and outside the United States.

Secretary RICE. Yes. It is essential to our primary warfighting mission that we be allowed to use different, more time-responsive acquisition procedures in wartime than we do in peacetime. While we believe we already have most of the contracting tools that we need to support rapid acquisition in a contingency, we know of a few statutory changes that would help.

First, we want to acknowledge the important role played by our existing authority to depart from the normal requirements in placing contracts. For example, the "unusual and compelling urgency" exception to full and open competition, 10 U.S.C. 2304(c)(2), was used to support Desert Shield/Desert Storm mission requirements and was vital to our acquisition efforts in supporting our forces. Also, the authority of each agency to award contracts despite a protest to the General Accounting Office, although not used often, did prove to be a valuable tool to prevent contracting delays in support of Desert Shield/Desert Storm. Normally, such a protest can delay the award of a contract for approximately 90 days until the protest is formally resolved.

Nevertheless, there are some statutory changes which we believe would enhance our ability to acquire goods and services in future emergency situations. Congress temporarily raised the ceiling for the use of simplified purchasing procedures in 10 U.S.C. 2304(g)(1) from $25,000 to $100,000 for purchases in support of Desert Shield/ Desert Storm. This permitted faster purchasing on a greater range of requirements for materials and services, both here and in-theater. It was especially helpful for over-the-counter purchases of available items in Saudi Arabia and adjacent areas. We would ask that a provision be permanently enacted to permit the Secretary of Defense to authorize such a temporary increase when necessary to support similar situations.

Another problem occurred in using "undefinitized contractual actions" (UCAs). Occasionally, where supplies, spare parts, or other materials were needed immediately, a letter contract or other form of UCA was used to instantly award the contract, with price and terms and conditions to be negotiated at a later date. However, in such cases, 10 U.S.C. 2326(b)(2) limits government expenditures to 50 percent of the not-to-exceed price for the UCA until the contract terms, specifications, and price are definitized. If a contractor submits a qualifying proposal, the government may expend up to 75 percent. In some cases, the contractors shipped items well in advance of contract definitization (or even before a qualifying proposal was submitted); therefore, the contractor could not be fully reimbursed for some period of time until a definitive contract was negotiated and executed. This is a negative incentive which penalizes contractor's rapid responses to contingency requirements. We recommend this statutory requirement be made waivable by the Secretary of Defense.

Overall, we believe the Air Force was able to make judicious and appropriate use of both normal and emergency acquisition procedures to ensure the best possible support for our mission and our people in the Persian Gulf. The key to our effort was the large number of contracting personnel (over 100) actually deployed in-theater in direct support of our forces, combined with the response of our personnel back home in areas ranging from systems acquisition and logistics contracting to the purchasing of operational supplies and services.

ENVIRONMENTAL MANAGEMENT

Senator NUNN. Secretary Stone, Secretary Garrett, and Secretary Rice, in the coming year, and into the future, the services will have to contend with ever more stringent environmental management, compliance and cleanup requirements. What type of long term review has been undertaken to determine what these various obligations will be, their cost, the impact they could have on other missions, the technologies they will require, and the research and development programs needed to bring these technologies to reality?

Secretary STONE. I agree that the Army and the other services will be facing more stringent environmental standards in the future for both compliance with current laws and cleanup of past contamination. Section 358 of the Fiscal Year 1990 Defense Authorization Act (P.L. 101-189) requires the Department of Defense to submit to the committees on Armed Services of the Senate and House of Representatives a comprehensive report on the long range environmental challenges and goals of the Department of Defense. This report requires among other things, the projected funding for and schedule of actions under the Defense Environmental Restoration Program and an assessment of anticipated Federal, State and local environmental regulatory requirements and the effects of such requirements on operations and activities of the Department. The Army is currently preparing its input out to the year 2000, factoring in both known and anticipated future requirements that will emanate from reauthorization of the various environmental statutes and the implementing regulations.

The Army also established an Army Environmental Policy Institute in September 1990 to specifically anticipate future environmental trends and assess and analyze future environmental challenges for the Army. This Institute is initially located with the U.S. Army Construction Engineering Research Laboratory in Champaign, Illinois, but is under the direct operational control of the Assistant Chief of Engineers. Its mission is to assist in the development of proactive policies and strategies to address environmental issues that may have significant future impacts on the Army. It is anticipated that the Institute will highlight fruitful areas of advanced technology and identify environmental research and development needs to overcome those future challenges.

Mr. GARRETT. We are constantly reviewing the environmental regulations and projecting impacts on the Navy in terms of compliance, cleanups, and resources. Currently, the Navy is preparing our input to a Department of Defense report to Congress on environmental requirements for the next 10 years. While the information is currently in draft, it is safe to say that significant resources will be needed by the Navy for manpower, training, technologies, and facilities if the Navy is to continue to be a leader in environmental management.

Secretary RICE. The Air Force is aggressively executing its environmental programs today as we plan our strategy for the future. I will first discuss our compliance program and ongoing initiatives to determine the impacts of future compliance requirements. Thereafter, I will focus on our restoration programs (cleanup of past disposal activities) as well as our ongoing pollution prevention activities.

The past year has been a period of major evolution within the Air Force environmental compliance program. Our primary goal is, of course, to identify and fix all non-compliance items. Our corollary goal is to anticipate new requirements and to plan, program, and budget accordingly.

Inherent in these goals is the ability to quantitatively measure the Air Force's compliance status with current laws and regulations. The Air Force achieved a major milestone with the establishment of our Regional Environmental Offices (REO) in September 1990 to provide coordination and interface with Federal regional and State agencies. The REOs provide us the capability to accurately track compliance status at the regional or State level, to discern trends and problem areas, and to identify solution sets through management practices, training, and facility projects.

Trends and problem areas identified through this new reporting process together with our self-evaluation program, the Environmental Compliance Assessment and Management Program have allowed us to identify the substandard/decaying components of the Air Force's infrastructure that are driving the majority of the enforcement actions. Specific initiatives are being undertaken to identify systems now out of compliance and those that will not comply as more stringent standards are applied. We are now identifying the facility projects necessary to achieve and maintain compliance, and are ensuring they are considered in the budget process. Initiatives are underway to assess our wastewater treatment systems, hydrant refueling systems, corrosion control (paint) facilities, fire training pits, and underground storage tanks.

In an attempt to further analyze future compliance requirements, the Navy, Army, and Air Force entered into a joint initiative to study the impacts of clean air regulations. Focusing on Southern California Air Quality Rules and their impact on six California-based Air Force installations, the effort involves the formulation of a baseline clean air program. Using this baseline data, financial requirements to fully comply with clean air legislation (including the new 1990 amendments) will be developed for all Air Force installations.

We have also initiated a much broader effort to analyze future environmental requirements across all major environmental media categories (wastewater, clean air, hazardous waste, etc.). This major undertaking involves creating a database that captures all Air Force resources which are affected by environmental regulations, and includes over 200 installations worldwide. Specially designed cost models, which account for both existing and anticipated environmental legislation, will be applied to installation data collected for all media. Through this methodology, the cost of full compliance over the next decade will be developed. Not only does this initiative focus on future compliance and cleanup requirements, but also on mission impacts, research and development requirements, and technology requirements involved with environmental management. The results of this study will be folded into the Air Force environmental budget process to further ensure resources are available for our compliance programs.

Recently, we have been working with OSD in developing a cost estimate for completing cleanup at each of our contaminated sites. The estimate for the Air Force portion is $6.5 billion. Based on this estimate, we know our annual funding level will have to increase to meet the fiscal year 00 cleanup goal.

In the area of technology, we are concerned that only a limited number of cleanup technologies are in use today. Therefore, we are attacking this problem by teaming up with the other services to catalog by site type and by site characterization the "acceptable" technologies which should be considered. This will enable installations preparing feasibility studies to focus on "proven" technologies without having to analyze the whole universe of available technologies. This will not preclude the consideration of a promising technology, but will usually require the analysis of that technology for cost and performance before it is included in a feasibility study.

We are also working with the EPA to sponsor promising technologies which have application to Air Force contamination cleanup activities. We plan to utilize EPA's laboratory capabilities to evaluate the technologies we are demonstrating at our installations. For those contaminants which do not have adequate cleanup technologies, we are working with EPA, DOE, and the other services to accomplish research development and demonstration projects.

Besides restoration, the Air Force is actively pursuing pollution prevention research at our Engineering and Services Laboratory to: (1) replace current industrial processes used in our maintenance activities with new, non-polluting technologies; (2) provide environmentally acceptable alternatives for recycling or disposing of solid rocket components; and (3) find alternatives to ozone-depleting chemicals now in use.

In summary, we have established a solid environmental baseline program and have added appropriate analysis tools to project future requirements. We are therefore confident in our abilities to meet existing as well as future environmental requirements.

A-12 "LESSONS LEARNED"

Senator **Nunn**. Secretary Garrett, cancellation of the A-12 program left a big hole in Navy aviation modernization plans. You stated in your testimony (page 13) that the Navy is "working toward definition and acquisition of an A-6 replacement aircraft necessitated by the A-12 cancellation." What lessons may be learned from this unfortunate situation that can be applied to buying weapons systems smarter as resources decline.

Secretary **Garrett**. Lessons can be drawn from the sequence of events which led to the cancellation of the A-12. These lessons are being incorporated into the AX program from the beginning. Capitalizing on information gained, we are confident that the AX will meet fleet needs, provide the best value for the investment and be affordable.

The AX program as currently envisioned includes open competition for concept exploration with award of up to five concept exploration contracts. The program would then downselect to a single contractor during the demonstration and validation phase. Emphasis during this phase would be in risk reduction in manufacturing, materials and propulsion. The requirement for a flying prototype will be included in the demonstration and validation process. We also envision that specifications and requirements should remain evolutionary during this process in order to allow latitude for weight and cost savings trade-offs to enhance producibility and affordability.

During the engineering and manufacturing development and production phases an integrated master plan relating cost and schedule performance must be in place. A government oversight team in place at contract award to monitor contract performance is an essential element of this effort. Milestones will be event based vice calendar based. Extensive testing and evaluation will be conducted to contain technical risk. Care must be taken to protect the technology and capabilities of this aircraft from unauthorized disclosure while allowing sufficient access to the program to allow proper cost and performance analysis and oversight. We anticipate that only selected technologies and information related to stealth will be classified as special access.

QUESTIONS SUBMITTED BY SENATOR ALAN J. DIXON

APACHE PERFORMANCE

Senator DIXON. Secretary Stone, much continues to be heard about the performance and reliability of the Apache—including the discounting of its impressive performance as a result of extraordinary maintenance support, with this in mind, would you set the record straight for the committee here today:

— How has the Apache performed?

— Has its reliability, availability and maintainability been acceptable with or without unusual support?

— Are you aware of any shortcomings that should be fixed and for which there is not an acceptable Army or industry remedy underway?

Secretary STONE. How has the Apache performed?

— The Apache performed in an outstanding manner during Operation Desert Shield/Storm. The aircraft weapon systems, and electronic sensors withstood the effects of the Southwest Asia desert, one of the harshest environments on earth, better than any other deployed army aviation system.

— Has its reliability, availability, and maintainability been acceptable with or without unusual support? Although we rapidly deployed approximately 50 percent of the Apache fleet, we have seen positive results from our ongoing efforts to improve reliability, availability, and maintainability. From the inception of Operation Desert Shield through the conclusion of Operation Desert Storm, Mission Capable (MC) rates in Southwest Asia (SWA) greatly exceeded Department of the Army goals. The Army gave priority of spare parts to all units deployed to (SWA). Units were filled to 100 percent of authorized strength. There were nine contractor field service representatives in SWA to support the 15 battalion force structure. USAREUR and III Corps sent civilian contractor maintenance personnel to augment unit capabilities. A special repair activity (SRA) was established at Abu Dhabi (UAE) to perform depot level repair on selected Apache systems, e.g. Target Acquisition Designation Sight/Pilot Night Vision Sensor (TADS/PNVS), main rotor blade and engine. This was done to shorten the 900 mile pipeline and effect quicker turn around to the user. These actions were taken within the context of existing doctrine, and are not considered unusual support.

— Are you aware of any shortcomings that should be fixed and for which there is not an acceptable Army or industry remedy underway? The Apache Readiness Improvement Program (ARIP) began in February 1989 as the Apache Action Team. It was formed to expedite development and incorporation of designed corrections to identified deficiencies affecting reliability and maintainability of the AH-64. The ARIP is a joint effort between the Army and civilian industry. A total of 186 issues have been addressed. One hundred twenty-four have been closed. Of the 62 remaining only 6 are top-priority and all have fixes underway. There are no issues remaining which do not have an acceptable remedy in process.

Senator DIXON. Details on Desert Storm, Apache employment and results are just starting to emerge. I understand they have been spectacular and rank up there with the Patriot's achievements. Noting that performance, what are your thoughts about maintaining or sustaining the number of Apaches at the authorized inventory level over at least the next 20 years? What about increasing this inventory?

Secretary **Stone**. The funded AH-64 procurement buys 807 aircraft providing sufficient Apaches to resource an attack helicopter warfighting force of 40 battalions. Of these, 26 are in the Active component, 12 in the National Guard, and 2 in the U.S. Army Reserves. This provides AH-64s for all heavy divisions and all corps. Each of these units is authorized 18 Apaches. The plan is to equip the RC AH-64 units with 15 aircraft each initially, while providing 18 to each AC unit. This prudent economic strategy will provide sufficient aircraft up front for training and float accounts. When force structure reductions are implemented, AH-64s will be re-distributed in accordance with DA priorities to AC and RC units. The procurement of 807 AH-64s will meet total force structure requirements today and in the future.

F-14D

Senator **Dixon**. Secretary Garrett, we need to develop an upgraded aircraft to offset the projected retirements of early F/A-18 aircraft in the late 1990s and thus avoid the situation we are now in with the A-6. Given this, what will be the cost to integrate weapons like SLAM, HARM, Harpoon or Maverick on the F-14?

Mr. **Garrett**. Integration of SLAM, HARM and Harpoon weapons on the F-14D is in the FYDP and funded. Maverick could be integrated, but no plans to do so currently exist. There are currently no plans to integrate these weapons systems on the F-14A and, therefore, cost estimates are unavailable.

Senator **Dixon**. When is it realistic to expect that these capabilities would be available for the F-14?

Mr. **Garrett**. Integration of HARM weapons on the F-14D would be complete by October 1994 and SLAM/Harpoon by October 1996. There are currently no plans to upgrade the F-14A.

F-14D AND F/A-18 RELIABILITY/MAINTAINABILITY COMPARE

Senator **Dixon**. How does the F-14D compare to the F/A-18 in terms of reliability and maintainability?

Mr. **Garrett**. The following data pertains to the F/A-18's reliability and maintainability as expressed in Mean Time Between Failure (MTBF) and Maintenance Manhours/Flight Hour (MM/FH):

	MTBF	MM/FH
F/A-18C	2.2 HRs	8.6 HRs
F/A-18D	3.2 HRs	6.8 HRs

It is too early to provide reliability and maintainability figures for the F-14D. Only 17 aircraft have been delivered to the Navy, all in Fleet Replacement Squadrons for training and Test and Evaluation Squadrons. The F-14D is not scheduled to deploy with an operational Navy Fleet squadron until calendar year 1993.

F/A-18 WEAPONS ACCURACY

Senator **Dixon**. Doesn't the accuracy of the current generation of weapons systems (like the F/A-18 and the F-15E) negate the requirement to carry large quantities of bombs to kill a target?

Mr. **Garrett**. Yes, that is generally true for point targets. In the Persian Gulf war, the F/A-18 repeatedly demonstrated the weapons systems accuracy needed to destroy this type of target. Not only does the extremely accurate F/A-18 weapons systems allow it to destroy a point target with a minimum number of "smart" or "dumb" bombs, but the Hornet's accuracy enhances survivability because fewer attacks are required. However, destruction of large area targets, such as an oil refinery complex or shipyard, generally requires larger quantities of bombs than are normally carried by a single F/A-18 or F-15E.

ATTACK AIRCRAFT

Senator **Dixon**. It is fair to say that if you do not need large quantities of bombs to kill the targets, the advantages of the F/A-18E's longer range and lower unit flyaway cost make it preferable to the F-14 as an interim attack gap filler aircraft.

Mr. **Garrett**. The choice of F/A-18 E/F was driven by the requirement to incorporate the latest technology at an affordable price to meet the multiple missions of attack, fighter escort and intercept at extended ranges and gross weight.

FIGHTER PRODUCTION

Senator **Dixon**. Secretary Rice, the Air Force has stopped production of the F-15E, to be followed by the termination of the F-16 in fiscal year 1993. I further understand that full production of the Advanced Tactical Fighter will not begin until early into the 21st century. What is the Air Force planning to do given the fact that there is a 10-year gap in production which will adversely affect our country's industrial base, especially at the second and third tier subcontractor level.

Secretary **Rice**. During the formulation of our fiscal year 1992 budget, we had to make difficult trade-offs between the need to maintain our technological advantage in future weapons systems even while quantitatively reducing force structure, and allocating the reductions in available fiscal resources. There will indeed be a gap in fighter production between the last F-16s in 1993, and the first preproduction ATFs in 1996. Consequently, as part of our periodic assessments of the subcontractor industrial base, we scheduled a fighter aircraft assessment to be completed in March 1991. However, because of the anticipated difficulty in getting access to key fighter industry contractors during ATF source selection, we shifted our resources to the bomber/airlift sector. The industrial base assessment for the fighter sector is now scheduled for completion in December 1991. At that time we will have information on the impact of the F-15 and F-16 terminations and the time lag before start-up of the ATF on the fighter subcontractor industrial base. Elements of our Industrial Base Program, such as the Industrial Modernization Incentives Program and the Manufacturing Technology Program, will continue to help improve the productivity and efficiency of our subcontractor base.

Questions Submitted by Senator John Glenn

THE SALK INSTITUTE

Senator **Glenn**. Secretary Stone, the Army's biological warfare vaccine production facility, the Salk Institute in Swiftwater, PA, is currently entering its 13th contractual year. The Army's current 5-year contract with the Salk Institute—valued at $40 million—will expire in 1993. Although, the Army and the Salk Institute have enjoyed a long-standing contractual arrangement for the production of vaccines against biowarfare threat agents, the GAO has found that Salk did not produce the anthrax or botulism vaccines needed by our forces involved in Operation Desert Storm. The GAO has also determined that the Army and the Michigan Department of Public Health have exiting contractual arrangements to produce both of these vaccines. If the Salk Institute did not produce vaccines against anthrax or botulism, what exactly was the Institute's contribution to the protection of our forces during the Gulf war?

Secretary **Stone**. The Army developed the anthrax and botulism vaccines and, as noted in your statement, contracted with the Michigan Department of Public Health (MDPH) to produce them. The contracts existed prior to Operation Desert Shield. These agents are sporeforming microorganisms; once they are introduced into a facility, that facility cannot be used to produce other vaccines. Desert Shield prompted the tasking of the Salk Institute to prepare for manufacture of additional botulism vaccines in space provided to them at Fort Detrick because sporeformers had already been produced in the Fort Detrick facility. Salk also produced the reagents that were utilized in diagnostic kits. The unexpected short duration of the Gulf war would not appear to be a reasonable yardstick for measuring Salk contributions.

Senator **Glenn**. If the Army has entered into other contracts for the production of vaccines, why do we need to maintain our contractual relationship with the Salk Institute, since it appears that Salk's contribution to the protection of our fighting forces was negligible at best?

Secretary **Stone**. The Salk Institute is contracted to have the manufacturing capability to produce vaccines that are not commercially viable, and to respond immediately to a tasking to produce vaccines not available elsewhere, or to amplify other sources of production. For example, the Salk Institute is currently producing a replacement smallpox vaccine in response to an OSD tasking, a recombinant Korean Hemorrhagic Fever vaccine, and additional lots of Rift Valley Fever and chikungunya vaccines. The Salk Institute maintains the substrates in a ready condition to produce vaccines, and it produces the reagents with which to identify, characterize, and certify vaccines and vaccine candidates.

Senator GLENN. In a time of "zero based budgeting" can the country afford to continue its contractual relationship with the Salk Institute?

Secretary STONE. Despite the declining defense budget, the Salk Institute investment is necessary to offset the declining industrial base in this country for biological products.

Senator GLENN. It has come to my attention that the MRDC, the BDRP, and the Salk Institute will be requesting commendations from the DOD for their contributions to the success of Operation Desert Shield and Desert Storm. On what basis will such commendations be issued? (To the best of my knowledge, the contributions of these programs to the effort in the Persian Gulf was extremely limited.)

Secretary STONE. To our knowledge, this question is without basis in fact, and such recommendations, should they be forthcoming, would be reviewed on their merit.

BDRP PRODUCTS

Senator GLENN. Why has the BDRP produced such a seemingly low number of medical products for the protection of our military forces against biowarfare threats?

Secretary STONE. The National Security concerns about biological defense arose in the period of proliferation of states possessing biological warfare capability. It was not until after 1982 that these concerns were translated into medical BDRP modernization programs. Normally, vaccine research, development and production is a 10 to 15 year process which requires considerable preclinical and clinical testing. In a number of instances, the time period is extended to accumulate human use data supporting safety and immunogenicity, and some indication of efficacy (observation of decreased incidence in at-risk individuals). Availability of vaccines under the BDRP include those against tularemia, Q fever, the equine encephalitis viruses (Eastern, Western, Venezuelan), Tick-borne encephalitis, Rift Valley Fever, Argentine hemorrhagic fever, and chikungunya. Prior to these vaccines, the Army was responsible also for the development of the anthrax and botulism vaccines in use today. Immune globulins for botulism, Bolivian hemorrhagic, and Lassa fever were developed under the BDRP. We are unaware of any comparison with other programs that would indicate that this is a seemingly low number of products, particularly since the commercial sector is declining.

BIOLOGICAL DEFENSE RESEARCH PROGRAM (BDRP) PRODUCTS

Senator GLENN. Are you currently taking steps to determine how the number of products coming out of the BDRP can be increased?

Secretary STONE. No extraordinary measures to determine how the number being implemented. However, actions are being taken by the Department to streamline and strengthen our acquisition process in this program as well as others.

Senator GLENN. Why has the BDRP used 43 percent of the product development funds for developing products that have nothing to do with diminishing the threat to our military against validated biowarfare threat agents?

Secretary STONE. The BDRP investment strategy must address both validated and potential biological and toxin threat agents in order to: (1) maximize the value of the BDRP as a strategic deterrent to the adversarial use of biological or toxin weapons against our forces, (2) constrain weaponization of these agents by an adversary, and (3) to protect our forces against the future adversarial use of biological or toxin agents. An investment strategy which addresses only currently validated biological and toxin threat agents is unacceptable because it results in unnecessary national security risks and avoidable force vulnerability while it fosters continuing the international proliferation of biological and toxin weapons.

Senator GLENN. Have you directed the Medical Command to discontinue the development of Lassa fever, Immune globulin and a vaccine against Korean hemorrhagic fever (Vaccina vectored)? Note: These 2 products under development by the BDRP are not directed against validated threats and account for 10 percent of the total product development costs.

Secretary STONE. The U.S. Army Medical Research and Development Command has not been directed to discontinue the development of these two products. Although the two products are not directed against threats currently validated by the Armed Forces Medical Intelligence Center, they do respond to a valid Capstone Joint Services Operational Requirement (JSOR) entitled, A Family of Hemorrhagic Fever Vaccines (CARDS Reference Number: 1477). This JSOR, based on the characteristics of the etiologic agents causing hemorrhagic fever, revalidates the 1981 Army Materiel Systems Analysis Agency Biological Defense Study and identifies these viruses as viable biological warfare agents. The diseases caused by the hemorrhagic fever viruses are highly infectious and lethal. As previously stated, it would undermine our National Defense posture and strategy to ignore such potential threat agents and to limit the BDRP to only currently validated threats. The BDRP investment strategy must continue to address both validated and potential biological and toxin threat agents.

Senator GLENN. How do you account for the BDRP's failure to develop vaccines against two of the world's most common BW threat agents—anthrax and botulism?

Secretary STONE. The basis of the question, i.e., failure of the BDRP to develop vaccines for anthrax and botulism, is an error in fact. The Army funded both the research and development of a vaccine against anthrax which has been produced by the Michigan Department of Health and has been licensed by the Food and Drug Administration since 1971. Similarly, a pentavalent toxoid (vaccine) consisting of the five known serological types identified by 1971, was produced in 1971 by the Michigan Department of Public Health under the Investigational New Drug (IND) Application auspices of the Food and Drug Administration.

Senator GLENN. Could the absence of these two products from the BDRP's list of accomplishments be due to the BDRP's penchant to work on developing products that do not address validated BW threats?

Secretary STONE. As stated in the answer to the preceding question, the two products have been available since 1971 and should not be considered as absent from the BDRP list of accomplishments.

Senator GLENN. How long do you estimate before the current product development efforts for the new anthrax and botulinal vaccines come to fruition?

Secretary STONE. These development efforts are designed to improve upon existing anthrax vaccine and botulininum toxoid. It is estimated that it will take 5 years to complete the studies required, including pre-clinical testing and early safety and immunogenicity testing before a new anthrax vaccine is available. New generation botulinum vaccines will require as much as 10–15 years before they are available.

BIOMONITORS

Senator GLENN. Secretary Stone, according to numerous media accounts, some military personnel involved in Desert Storm were shown standing near caged rabbits and chickens, which were serving as living detectors for any releases of chemical and biological agents by the Iraqi forces. Since fiscal year 1984, roughly $11 million/year of BDRP funds have been directed toward development and testing of biowarfare detection and defensive equipment.

Secretary Stone, can you explain to me why the Army's Chemical Research, Development, and Engineering Center has failed to develop a bona fide biological agent detection device?

Secretary STONE. For Operation Desert Storm, the Army provided point aerosol samplers and biological detection kits that provided the capability to detect the biological agents considered to be the primary threats.

Senator GLENN. What is the status of biological agent detection equipment? How long before our military will have field-ready and reliable biological agent monitoring equipment?

Secretary STONE. The Army's Chemical Research Development and Engineering Center has undertaken the development of a combined Biological/Chemical Detector (BCD) to provide the capability to detect up to 20 biological threat agents. The wide spectrum of biological threat agents are particularly difficult to detect due to the sheer numbers of threat agents and widely varying detection methods required. Very recent technological advances linking biological detection response techniques with microelectronics have permitted the development of fieldable systems capable of operating in a war time military environment.

The BCD will begin advanced development in fiscal year 1992 and fielding is scheduled for fiscal year 1999. The Army's CRDEC has also undertaken the development of the Chemical, Biological Mass Spectrometer which has an even greater capability to detect and identify biological and chemical threat materials than the BCD. The Chemical, Biological Mass Spectrometer is scheduled to enter advanced development in fiscal year 1994. Fielding is scheduled for fiscal year 2002.

BIOLOGICAL DEFENSE RESEARCH PROGRAM (BDRP) PROJECTS

Senator GLENN. Secretary Stone, in May and August 1989, I was informed by officials at the Pentagon and the BDRP that the research program did not support or fund research and development activities that were not related to validated biowarfare threats. Yet, in a December 1990 report to me, the GAO found that over 40 percent of research monies had been directed to investigations of non-validated threat agents. Given the sizable number of verified threat agents to study, why is the Army researching agents that are not validated by the intelligence community as likely or probably biowarfare threats?

Secretary STONE. In reviewing the GAO report entitled, Biological Warfare: Better Controls in DOD's Research Could Prevent Unneeded Expenditures, and our communications on this matter, it is obvious that pivotal issues of disagreement are the traits of the biological warfare threat and the Department's goals and objectives for mitigation of this threat. The authors of the GAO report would have us believe that the biological warfare threat to the United States is strictly restricted to a list of validated threat agents, ". . . a biological agent that the intelligence community has assessed as being developed or produced as a weapon." This characterization of the biological warfare threat is necessary for the intelligence community, combat developers, and materiel developers to differentiate between categories of biological and toxin agents being weaponized versus those having characteristics compatible with potential weaponization. It is not a sufficient characterization of the threat for those research, development, and acquisition actions which are essential for effective fielding of defensive countermeasures, constraining adversarial weaponization and deterring use of biological or toxin agents against our forces.

Senator GLENN. Secretary Stone, have you directed the Medical Command to discontinue the non-threat related research projects?

Secretary STONE. No, an effective medical biological defense modernization program must incorporate both the validated and the potential biological warfare threat.

Senator GLENN. Secretary Stone have you directed the Medical Command to include independent officials in the review process for future research projects that are funded by the BDRP?

Secretary STONE. No. Effective procedures are in place for monitoring the medical BDRP. Since 1986, the BDRP has been the topic of several congressional hearings by both the House and Senate as well as the subject of several GAO reports. Additionally, the BDRP is the subject of a number of special annual reports to the Congress. Within the past 5 years the program has been reviewed by: the National Academy of Sciences Board on Army Science and Technology; the Army Science Board, Headquarters, Department of the Army (both the Secretariat and the Army Staff); and the Office of the Secretary of Defense. The Defense Science Board is scheduled to review the program in the near future.

RESERVE AND NATIONAL GUARD

Senator GLENN. By all accounts, the Reserve and National Guard personnel played a key role in Desert Shield/Storm. The activation of these personnel has obviously placed a heavy strain on them and their families. Do you see any problems on the future recruiting and retention of Reservists and National Guardsmen—many of whom do not have mandatory service obligations? If you do, in what particular fields do you anticipate problems?

Secretary STONE. The full impact of Desert Shield/Storm on the Army's Reserve component recruiting and retention programs is difficult to assess and is not known at this time.

Recruiting for the first 6 months of fiscal year 1991 shows the Army National Guard (ARNG) is 33 percent below the desired level while the Army Reserve (USAR) is 21 percent below the mission. Several factors contributed to this decline. First, from October through December, recruiting was suspended for units that were activated to support Desert Shield/Storm. Second, the Army Stop Loss actions prohibited recruitment of separating Active component soldiers from transitioning into ARNG and USAR units. However, with the upcoming surge of soldier releases from active duty, we expect to yield a high number of transition assignments into our Reserve component units. Finally, some reluctance appears to exist on the part of new recruits to enlist. But, it is too early to determine if this condition has any permanency. In view of this circumstance, we are closely examining our incentive packages to respond to changing market conditions.

Looking at retention results for the first half of the year, the performance of both the ARNG and USAR is encouraging. Reenlistment rates for both the ARNG and USAR are above fiscal year 1990 levels. During fiscal year 1990, the ARNG aggregate first term and career reenlistment rate was 75 percent while for the period October–February fiscal year 1991, it rose to 97 percent. For the USAR, the aggregate reenlistment rate rose from 75 percent in fiscal year 1990 to 79 percent during the period October–February 1991. While these rates are reassuring, the aggregate number of Reserve component reenlistments is lower than previous years due to Stop Loss. These higher Reserve component reenlistment rates are expected to continue throughout fiscal year 1991.

It's too early to determine retention problem trends for a particular field. The Reserve soldier's ability to separate the needs of our Armed Forces from the political issues of their presence in the Middle East was evident from reports of interviews with Reserve soldiers serving in Operation Desert Shield/Storm. There was no display of bitterness by Reserve soldiers visited toward the call-up of the Guard and Reserve. Decisions to stay or leave for soldiers returning from Desert Storm will be influenced by their perception of their contribution to the operation, their civilian employment situation, and the attitudes of their family. However, extended active duty may cause reservists who are self employed or professionals to reassess their willingness for continued participation in either a unit or a less active status, especially the medical personnel in the ARNG and USAR who have made and continue to make an outstanding contribution to medical support for Desert Shield/Storm. They are serving in Southwest Asia, as well as in Europe and CONUS. The Army has some concern about the recruiting and retention of medical professionals, such as physicians and nurses, in the Reserves as a result of this experience. Evidence suggests that some activated officers, particularly physicians, have incurred significant financial hardship due to their military service.

Senator GLENN. By all accounts, the Reserve and National Guard personnel played a very key role in the delivery of equipment and personnel to the Persian Gulf. The activation of these personnel has obviously placed a strain on them and their families. Do you see any problems on the future recruiting and retention of reservists and National Guardsman-many of whom do not have mandatory service obligations?

Secretary GARRETT. Although it is too early to determine the full impact of Operation Desert Shield/Storm on recruiting and retention, our initial indications are that we will not see a large number of our reservists leaving the Reserve force. Although we will have some reservists who choose to separate, many of those who were called to active duty feel a sense of pride and accomplishment for having served during this operation. Our recruiters did experience some increased resistance to join during Operation Desert Shield, however, due to the patriotism and support the American people expressed for our military during Operation Desert Storm, we anticipate this reluctance will subside.

Senator GLENN. By all accounts, the Reserve and National Guard personnel played a key role in Desert Shield/Desert Storm. The activation of these personnel has obviously placed a heavy strain on them and their families. Do you see any problems on the future recruiting and retention of Reservists and National Guardsmen—many of whom do not have mandatory service obligations? If you do, in what particular fields do you anticipate problems?

Secretary RICE. Operation Desert Storm has had an impact on Air National Guard recruiting and retention. In comparing August 1989-January 1990 to August 1990–January 1991 data, lower accessions and higher losses were shown. We believe this drop is a result of the Gulf crisis. However, other factors also contribute to the changed recruiting picture. Stop Loss within the active Air Force impacted our normal level of prior service accessions. We also experienced a pause in recruiting; however, the outlook since mid-February has been encouraging. Initial projections were that our losses would increase tremendously after Operation Desert Storm. The swift and highly successful conclusion of the conflict has reversed our projection, and feedback from Air National Guard retention personnel is that losses will be very close to normal levels.

The real impact of the conflict on Air Force Reserve recruiting and retention is unknown at present and will be for the next 3–4 months. However, we anticipate our largest exodus and shortages in the medical skills area.

RESERVE COMPONENT REDUCTIONS

Senator GLENN. Secretary Stone, the budget proposes a reduction in Selected Reserve strength of 270,000 (23 percent) over the next 5 years. The bulk of the reduction is in the Army. What is the basis for this reduction?

Secretary STONE. Faced with an evolving threat and the fiscal realities of a declining defense budget, the Army has set a course for reshaping its force structure to adapt to the changing environment. Choices about the size and composition of the Total Army are based upon assessments of current and potential threats to the Nation and of the capabilities required to meet them.

There is a diminishing U.S. requirement to maintain large standing conventional forces ready for immediate use to counter a short-notice Soviet attack. Similarly, the requirement for rapid reinforcements is reduced. The Army's contribution to forward presence will be supplemented through the periodic deployment of forces from CONUS or forward bases. The increasing time available to detect and counter a major Soviet buildup permits the United States to rely on the capability to reconstitute additional forces over a longer period of time. These assessments are tempered by considerations of affordability and risk.

The Soviet retrenchment has permitted the Army to reduce the size of our Total Army and to adjust our force generation model. This model is the construct by which the Army maintains forces for commitment over time based on their ability to attain essential levels of warfighting capability in peace-time and on the likely length of time available to mobilize, train, and equip these forces prior to their employment. The Army's challenge is to maintain the appropriate mix of these forces as we reshape the Total Force for the future.

In projecting future force reductions, the Army has focused on maintaining sufficient forces in the Active component to satisfy crisis response and most forward presence requirements, and on a structure for CONUS-based reinforcing forces that relies primarily on the Reserve components. However, as combat elements of the Total Army are reduced, Reserve component combat support and combat service support forces that support those combat forces are no longer required and are also removed from the Total Army force structure.

REDUCED ROLE FOR THE NATIONAL GUARD

Senator **Glenn**. Secretary Stone, do you plan a reduced role for the National Guard and Reserve components? For example, the Total Force Study Report we received early this year indicates the following assumptions with regard to the future of the National Guard and Reserve forces:

Contingencies of less than 30 days. No Reserve forces would be activated. The Active component would be relied on solely to respond. Individual National Guard or Reserve volunteers with needed skills would be accepted as augmentees.

Contingencies of less than 60 days. No Reserve combat forces would be used. National Guard and Reserve combat support and combat service support forces would be used as needed to augment or back-fill Active components.

Contingencies of over 60 days. National Guard and Reserve forces would be used. Included in these forces would be roundout combat units for later deploying Active forces, as well as forces needed to maintain a rotation base.

General purpose forces would continue to be retained in the National Guard and Reserve force structure—some would be maintained at lower readiness levels that would require at least 1 year to reach satisfactory combat readiness.

Secretary **Stone**. The Army will continue to rely extensively on both Reserve components for combat support and combat service support augmentation and to provide reinforcing combat forces. Their timely activation for crises beyond small-scale contingencies will be essential to the successful attainment of U.S. objectives. The ability to successfully expand Army forces rests on adequate strategic warning, detailed mobilization planning, timely use of call-up authority and planning assumptions, periodic testing of the mobilization apparatus, and the foresight and discipline to adequately resource programs and units required on mobilization. Operation Desert Storm has shown us that the time lines for activation of RC combat units (e.g., Roundout Brigades) should be adjusted to allow time for units to complete post-mobilization training requirements prior to employment.

TOTAL FORCE POLICY REPORT ASSUMPTIONS

Senator **Glenn**. Wouldn't these assumptions practically strip the National Guard and Reserve components of their existing early deploying combat role and relegate the entire National Guard and Reserve to a reinforcing, reconstituting back-up role?

Secretary **Stone**. The Active Army will be structured to sustain deployed units for about 30 days without substantial Reserve component augmentation. Reserve component units will continue to provide required combat, combat support, and combat service support. Because of the substantially reduced size of the Active component, the Army will rely on the timely mobilization of Reserve forces for major and prolonged contingencies. Our current plans envision generating the majority of our reinforcing forces from CONUS. The first units to reinforce will be Active component divisions rounded out by Reserve component combat brigades. These units will be capable of early reinforcing of deployed forces or dealing with a secondary contingency after Reserve component call-up and training. The second group of units will consist of fully structured Reserve component combat divisions for follow-on reinforcement. These units will be available after a more extended period for mobilization and training.

QUESTIONS SUBMITTED BY SENATOR JOHN W. WARNER

Senator **WARNER**. Secretary Stone, your budget request for fiscal year 1992 does not include any funding for MLRS rockets. With the exceptional comments we heard regarding the outstanding performance of MLRS in the Persian Gulf, I am surprised that your budget request effectively terminates production of the rockets. Would you indicate to the committee your plans on future production of MLRS rockets?

Secretary **STONE**. The Total Obligation Authority (TOA) available to the Army in fiscal year 1992 did not allow us to fund all of our requirements. The MLRS rocket program was one of the requirements which could not be funded with the resources that were available. The Army felt that rocket termination was a prudent risk since procurement through fiscal year 1991 will result in meeting 65 percent of the fiscal year 1997 Authorized Acquisition Objective (AAO).

ADVANCED ANTI-ARMOR WEAPON SYSTEM-MEDIUM (AAWS-M)

Senator **WARNER**. Secretary Stone, the Army recently reported that the replacement for the Dragon medium anti-tank system, the AAWS-M program, is experiencing difficulties—that we will have to add a 4th year to the Full Scale Development program and incur at least an additional $100 million in cost growth. Would you describe the importance of this program to the Army and indicate what the Army is doing to maintain control over this program? Should we consider any of the previously mentioned interim candidates to replace Dragon?

Secretary **STONE**. The capabilities of the AAWS-M weapon system revolutionizes the use of medium antiarmor systems on the battlefield. With fire and forget technology, top attack trajectory, soft launch capability and an integrated day and night sight, the AAWS-M provides the infantry soldier the lethality and survivability in an antiarmor system which he has never had before. No other medium antiarmor weapon system in the world can match the AAWS-M capabilities. In efforts to control the program, the Army Acquisition Executive (AAE) and the Vice Chief of Staff directed that the AAWS-M program be restructured to reflect a realistic cost and schedule as follows:

— Increase the program schedule from 36 to 46 months to reduce concurrency.

— Modify the current contract to reflect a target cost and cost sharing arrangement.

— Establish intermediate milestones and a quarterly AAE review of contractor progress.

— Conduct independent cost estimates with the Army Cost and Economic Analysis Center (CEAC) and the OSD Cost Analysis Improvement Group (CAIG).

— Assign full-time Army AAWS-M representatives at both primary contractor facilities.

— Establish a mechanism for the PEO/PM to control contractor spend rates and manpower loading.

The Army, again, goes on record as being opposed to any interim system. AAWS-M is the Army's committed course of action.

DEFENSE AUTHORIZATION FOR FISCAL YEAR 1992-1993

Senator **WARNER**. Secretary Stone, can I also ask you if the Army supports the restructured MILSTAR program? Specifically, does it satisfy the Army's tactical communications requirements?

Secretary **STONE**. The restructured MILSTAR program will provide most of the critical command and control for echelons, corps and below. As previously stated to Senator Thurmond, I think I support Secretary Rice's answer, that we have a strong and effective MILSTAR program. Obviously, we would like all the capability that we can have in the communications area. However, we are satisfied that the present program will give us a satisfactory capability.

ANTI-SATELLITE PROGRAM

Senator **WARNER**. Secretary Stone, does the Army still support the requirement for an Anti-Satellite system to counter overhead threats?

Secretary **Stone**. Yes, the requirement for an Anti-Satellite system to counter overhead threats is specified in the JCS approved USCINCSPACE Mission Need Statement, Multicommand Required Operational Capability, and Kinetic Energy near term requirements for a space control Anti-Satellite capability.

Senator **Warner**. Secretary Garrett, does the Navy also see a need to counter hostile overhead systems to enhance the survivability of the fleet?

Secretary **Garrett**. Current Soviet radar (RORSAT) and electronic intelligence (ELINT) space-based surveillance and reconnaissance systems pose a formidable but not insurmountable threat to U.S. maritime forces. Current systems either require a cooperative target or are resolution limited. These restrictions have allowed the U.S. Navy to reduce the effectiveness of these threat systems by effective operational employment practices. However, the introduction of new technology and the ability of many nations to use space systems is a more serious threat. The addition of the recently launched synthetic aperture radar (SAR) satellite to the Soviet Ocean Surveillance System (SOSS) adds a day/night, all weather surveillance capability. Future systems could include infrared (JR) sensors, pulse Doppler radars, improved ELINT satellites, and satellites capable of geo-locating fleet UHF transmissions.

Without effective countermeasures, U.S. forces may risk losing tactical surprise and could be subject to targeting of own forces. Navy requires the capability to counter this growing threat at each stage of crisis and war, dictating a broad range of weapons and countermeasures which can be selectively applied at various levels of conflict. [Deleted.]

NAVY INDUSTRIAL BASE REQUIREMENTS

Senator **Warner**. The size of the Navy force is being reduced, and the number of ships is being reduced. Ship and aircraft overhaul modification actions may be reduced in concert with the smaller force and more reliable systems. These statements would tend to justify a smaller infrastructure, fewer shipyards, and depot consolidation. However, if you take these actions you restrict your ability to surge and react to regional and global conflicts. How are you planning to balance and fund these ingredients to protect naval forces and support activities for future surge requirements?

Secretary **Garrett**. Naval ship support activities for future surge requirements fall into two general areas, repair/modernization (primarily public yards), and new construction (private yards). Through our regular scheduled ship depot maintenance and modernization efforts, we not only keep Navy ships materially ready but also support the maintenance industrial base to ensure it exists when a crisis occurs such as the recent Desert Shield/Storm. The new ship construction industrial base is supported almost entirely through the Navy ship building program and the sizing of this segment is driven by work available for new construction..However, as demonstrated during Desert Shield/Storm the crisis of the future will most likely be met with the forces on hand with insufficient time for any major new construction ship building efforts. The public and private ship maintenance and modernization support infrastructure will continue to decrease in size to balance to the force structure it supports.

AX

Senator **Warner**. What priority would you place on the AX development, and the medium attack requirement, within Naval Aviation? What do you envision as candidate concepts for the AX program? When will the actual industry solicitations begin?

Secretary **Garrett**. The AX is the number one priority for Naval Aviation. Medium attack is the cornerstone to carrier aviation's capacity to meet the full spectrum of the Navy's traditional power projection missions. Aside from the need to have a capable and survivable medium attack platform, we are not prejudging the utility of any concept to meet the AX requirement. We anticipate that a request for proposals will go out to potential bidders in the July 1991 timeframe.

FOLLOW-UP TO AX

Senator **Warner**. Does development of an F/A-18E and F constitute a replacement for the A-6 in the interim before a follow-on, such as an AX, can be developed, or is it more simply a replacement for current generation F/A-18C and D and the F-14? Doesn't development of the E and F F/A-18 compete for scarce R&D dollars with the AX priority if it begins too soon before firmly establishing the AX development?

Secretary GARRETT. The F/A-18E/F is the follow-on to the F/A-18C/D and the F-14. Although the F/A-18E/F is not a follow-on to the A-6, we will buy more F/A-18C/Ds and E/Fs to address A-6 inventory shortfalls which will occur before the A-6 replacement, the AX, achieves IOG. This will keep our carrier decks full while modernizing to meet future threats. The cost of developing both the F/A-18E/F and AX have been taken into account and are phased to be affordable within current fiscal constraints.

NAVAL MINESWEEPING CAPABILITY

Senator WARNER. While there was no amphibious assault of Kuwait, there is no doubt that the threat of an amphibious assault by the Marine Corps fixed in place several Iraqi divisions that were guarding the coastal beaches. From this point of view, as a deception, the amphibious feint was a success. However, we were told while on our recent visit, that if those Iraqi divisions had moved to threaten the main allied attack in the West, it might have been necessary to conduct the amphibious assault.

One of the primary factors which made the amphibious assault an extremely high risk was the insufficient Naval Minesweeping Capabilities. It seems to me that this is a capability we must address in order to have a viable amphibious threat for the future.

Mr. Secretary, I would like to hear your views on this situation.

Secretary GARRETT. Where hydrography favors defensive mining, as was the case along the coastal beaches of Kuwait, Mine Countermeasures (MCM) become critical in reducing risk to Amphibious Assault forces should it become necessary to conduct a full scale amphibious assault. A deficiency exists in Shallow Water Mine Countermeasures and an accelerated effort is underway by the Navy and Marine Corps to resolve the technical issues associated with this problem.

MILSTAR

Senator WARNER. Secretary Rice, does the Air Force fully support the restructured MILSTAR program? In the past, there has been some question as to whether the Air Force supports the MILSTAR program. Consequently, can you assure the committee that the Air Force does indeed support the program, particularly the restructured MILSTAR program?

Secretary RICE. Yes. The Air Force fully supports the restructured MILSTAR program. MILSTAR is the Air Force's highest priority space Command, Control, and Communications program. It will be an important component of global reach, providing flexible, secure, jam-resistant command and control for forces deployed to crisis areas like the Persian Gulf. The program restructure will further enhance its tactical utility for contingencies and conventional conflicts of this nature. In that sense, the restructured MILSTAR program will be a more effective system for those who are most likely to use it.

PEACEKEEPER PRODUCTION

Senator WARNER. Secretary Rice, in the Air Force report to the 1O2nd Congress, it states that "early force reductions must be carefully considered in order to preserve subsequent force structure options and not remove incentives for the Soviets to seriously negotiate an equitable treaty." It goes on to say that "even after a START agreement is in force, the Soviet Union will retain more than enough nuclear weapons to destroy the United States." Secretary Cheney noted in recent testimony to the committee that the Soviets are continuing their strategic modernization of the SS-18 heavy ICBM and that in addition "5 or 6 new long-range ballistic missiles are under development."

In light of continued Soviet ICBM modernization and the unlikelihood of a START Treaty any time soon, how can the United States shut-down its only active ICBM production line—the Peacekeeper—this year? Don't we remove the very "incentives for the Soviets to seriously negotiate an equitable treaty" as the Air Force characterized it? Don't you think the committee should reconsider the earlier Air Force decision to terminate the Peacekeeper production line, particularly in light of the ongoing multiple Soviet ballistic missile production line?

Finally, yesterday I asked General McPeak if the Air Force had conducted a serious analysis of the impact of closing the Peacekeeper on future ICBM production capability, such as the Small ICBM, and if so, would you make it available to this committee? He said he would. Will you see that this analysis is provided to the committee?

Secretary **Rice**. The Air Force has completed deployment of 50 Peacekeeper missiles in Minuteman silos. By congressional direction, only 50 missiles will be deployed, irrespective of the basing mode. The missiles being produced today are to be used to replace those deployed missiles selected for operational testing. In the past, the Air Force has purchased test assets for missile programs based on classical statistical testing models. This has proven very effective in identifying and correcting system anomalies normally found with any new, high technology weapon system. However, the developmental/initial test and evaluation effort with the Peacekeeper missile produced an unprecedented ballistic missile system success rate. Coupled with the proven accuracy of the ICBM engineering estimates and the current fiscal realities, CINCSAC lowered the test rate from the classical statistical level of seven per year to three per year. Consequently, testing three missiles per year through the design life (15 years), requires a program buy of 114 assets; we have met this milestone in fiscal year 1991.

The worth of the Peacekeeper program is based primarily on the military capability it provides, rather than on the extent to which it is perceived as a "bargaining chip" for the future negotiations with the Soviets. Although the Peacekeeper production line will cease in fiscal year 1991, sufficient assets for deployment and testing will be available throughout the design life of the weapon system. Thus, Peacekeeper's unprecedented military effectiveness will continue to provide the capability to execute our national deterrent strategy during this period. It is in this regard that it will continue to influence our future negotiations with the Soviet Union. Based on the above reasons I do not believe the committee needs to revisit the Peacekeeper production decision.

Although no formal analysis of the impact of Peacekeeper production shutdown on future ICBM production capability has been performed limited analysis reveals higher industry overhead costs can be expected. As a direct result of this action, small vendors can be anticipated to cease support of the ICBM modernization program.

DMR SAVINGS VERSUS BUDGET CUTS FOR DEPOTS

Senator **Warner**. Under the Defense Management Review (DMR) and subsequent report, large cuts were made in operation and maintenance (O&M) funding based on "projected savings" from depot consolidations and closures. But the "savings" appear to result almost entirely from less funds available, rather than management decisions generating savings which in turn could allow cuts in funding. This is a classic example of taking credit for cuts disguised as savings.

In your opinion, are these consolidations and changes to the depots moving too fast?

Are there better ways to proceed in this very delicate builddown of the depot capabilities?

Would you rather for the cuts to O&M depot funds be made based on proven savings or prefer the cuts, to meet budget targets, drive the resulting structure?

Secretary **Rice**. To characterize the DMR as merely a response to funding reductions is not appropriate. The DMR actually predates the more recent changes in the world situation, which drive our current downsizing, and was aimed at improving some long-standing acquisition and business practices. The Air Force views the continuing DMR as a mechanism to identify, evaluate, and implement healthy changes in the business practices of the DOD. Within this context we are making literally hundreds of major and minor changes to Air Force management practices with cost reduction as the primary goal. Certainly we have used these changes to provide the wherewithal to absorb the large reductions in the DOD budget. In many ways it is fortunate that we had these initiatives available at the time we did or we would be looking at even larger reductions in force structure.

Unfortunately, time does not afford us the ability to fully test these changes before we move into widespread implementation. In today's fiscal environment, we must proceed as rapidly and as prudently possible. While we have some concerns about the pace of some of the specific initiatives, we believe the overall schedule risk to be manageable and will monitor it closely.

With regard to savings, there are really two issues. First, we maintain that these savings are not simply disguised cuts. Upon closer scrutiny, the savings for each of our initiatives are based on logical and pragmatic changes in the management structure and practices of the DOD/Air Force. We are transferring supply depot operations and consumable items to the Defense Logistics Agency, streamlining depot maintenance operations, increasing interservicing, and beginning public-public and public-private workload competitions. Our clear intent is to provide the same or better service at less cost across the board. The second issue is the size of the savings. At this point it is simply something that reasonable people can disagree on and only actual application will resolve.

We have not let the budget drive our commitment to maintaining Air Force readiness and sustainability. The Secretary of Defense, the Chairman of the Joint Chiefs of Staff, the Chief, and I are all fully committed to ensuring that, as we draw down our forces, they will remain ready and capable.

C-17

Senator **Warner**. The Herculean lift effort in support of Desert Shield and Desert Storm would tend to place renewed emphasis on the ongoing C-17 development. What is your assessment of how well the C-17 contractor has recovered from earlier "growing pains," and how confident are you in the contractor's ability to now meet future milestones of the C-17 contract?

Secretary **Rice**. The Under Secretary of Defense for Acquisition conducted an exhaustive evaluation of the C-17 program in the first quarter of 1991; the Air Force Acquisition Executive participated actively in this review. As a result, we are confident we have a sound assessment of the program's progress as well as its problems and risks. The review's findings were generally positive. We did not identify any unworkable technical problems; adequate corrective action plans had been implemented for known problems. Douglas Aircraft Company's management and efficiency indicators are improving steadily and previous cost and schedule problems are being brought under control. Since we rebaselined the C-17 program in December 1989, the contractor has met all critical milestones to date, the most recent example being completion of the test aircraft (T-1) assembly on schedule in December 1990. This aircraft is now undergoing system level integration testing and we are planning on a T-1 first flight this summer.

Questions Submitted by Senator Strom Thurmond

C-17

Senator **Thurmond**. Secretary Rice, the Major Aircraft Review adjusted the C-17 program goal to 120 aircraft, down from 210. Based on the Air Force's airlift experience during Operation Desert Storm, are the 120 aircraft still a valid goal for procurement or is there a need for more aircraft?

Secretary **Rice**. The Major Aircraft Review (MAR), which culminated in April 1990, reduced the C-17 program total procurement from 210 to 120 aircraft. However, Congress has directed that a strategic Mobility Requirements Study (MRS) be conducted to evaluate the future strategic airlift capability required to project our forces. This study will quantify the requirements in light of the changing force structure and provide a baseline for tailoring our future airlift capabilities. Until the MRS is completed, the requirement for 120 aircraft will not change.

SHIP OVERHAULS

Senator **Thurmond**. Secretary Garrett, Admiral Johnson, the Vice Chief of Naval Operations, testified before this committee that as a result of Operation Desert Shield/Storm ship overhaul and repair is being postponed for 23 ships involved in the operation. He further indicated that 14 ships not involved are being moved up from the fiscal year 1992 schedule to take their place. Now that the operation has come to a successful completion have you resolved how long it will take the Navy to catch up on overhaul work and do you have the funds to do the work?

Secretary **Garrett**. With the rapid success achieved in Operation Desert Shield/Storm deployed units are being returned sooner than originally anticipated. A reevaluation of our previously announced plan indicates that the fiscal year 1991 scheduled maintenance program is now achievable this fiscal year. As Desert Storm deployers are being released from operational commitments, scheduled availabilities are being accommodated by shifting within fiscal year availability start dates. Ship maintenance planning in anticipation of Desert Shield commenced last fall. Short duration availabilities for non-deployers were shifted forward, while Desert Shield deployer availabilities were shifted to start later within the fiscal year.

The Navy is continuing to assess the needed repairs on our deployed ships as they return home. The accelerated were and tear due to the heightened state of readiness and harsh environmental operating conditions will probably require cross fiscal year schedule accommodations. Emergent ship repair and Intermediate Maintenance Activities/Tenders have incurred significant surge costs in preparation for deployment, in-theater rapid turn around requirements and repairs discovered upon return. The Desert Shield/Storm supplemental funding should cover required ship maintenance costs.

POWER PROJECTION

Senator **THURMOND**. Secretary Garrett, during the last 7 months the Navy demonstrated its capabilities by its support of Operation Desert Storm, the evacuation of Monrovia, Liberia, and the evacuation of our citizens from Somalia. If we reduce our fleet to the size projected in the proposed budget, will we have the capabilities to perform these same operations in the future?

Secretary **GARRETT**. During the course of the last several months the Navy did demonstrate its ability to deal with simultaneous crises. In large part this was possible due to the investment in ships, people and training that we have made since the early 1980s. While the budget has required that we reduce the overall size of the fleet, these reductions will not translate into an equivalent reduction in capability. Numerous vessels, especially many of the amphibious ships that played such prominent roles in the operations you mentioned, are nearing the end of their useful service life. While they will not be replaced in the same numbers that currently exist, we are bringing on line larger and more capable platforms. The first of the WASP class (LHD-1) is now in the fleet, and we recently christened the second ship of the class. These vessels incorporate capabilities that previously would have required three ships, an LPH, LKA and LSD. While we will have fewer ships, the Navy will continue to have the ability to meet crises similar to what we faced in Liberia and Somalia during the course of Desert Shield.

If we were called upon to meet either a higher level of response or response to simultaneous crises, it would indeed prove very difficult. Given the force structure projections for 1995, this would be especially true if we were required to sustain a high level of presence over a long period of time.

FORCE STRUCTURE REDUCTIONS

Senator **THURMOND**. Secretary Garrett, as the Navy is forced to reduce the size of the fleet from its current size to the 450 ships projected in the budget, do you anticipate having to close any of our current homeports?

Secretary **GARRETT**. The Fiscal Year 1991 Defense Authorization Act requires us to consider all installations on an equal basis for possible closure or realignment. We are committed to follow the letter and the spirit of the law, and are looking at every installation without regard to whether it was previously proposed for closure or realignment by the Department of Defense.

CRUISE MISSILE CARRIER

Senator **THURMOND**. In your statement you allude to Soviet capabilities to extend their air defenses far out over the Arctic against non-stealthy cruise missile carriers. Do you mean that the Soviets will eventually have high confidence that they can destroy all the B-52s and B-1s before they launch their stealthy cruise missiles?

Secretary **RICE**. [Deleted.]

COST OF B-2 PROGRAM

Senator **THURMOND**. Secretary Rice, I would like to expand on your remark that the peak-year funding needed to build the B-2 is lower than for any bomber in modern history. Do you mean that, even when the defense budget was a higher fraction of GNP, we spent a higher fraction of that higher budget on a single bomber program—and we did it four times?

Secretary **RICE**. The B-2 program is a very small share of the total Department of Defense (DOD) budget. The B-1B, B-52, B-47, and B-36 all had larger peak funding years as a percentage of the DOD budget. Currently, B-2 fiscal year 1992 funding represents only 2 percent of the DOD budget. The peak funding year as a percentage of the DOD budget for each previously stated bomber is B-1B—1985, 2.7 percent; B-52—1957, 3.0 percent; B-47—1951, 6.2 percent; and B-36—1949, 2.3 percent.

THE TRIDENT WARHEAD

Senator **THURMOND**. Secretary Garrett, right now it appears that DOE will not be able to provide W-88 warheads for the Trident missiles and that the Navy will have to use the lower yield and less accurate W-76. I have two questions on this.

First, will the Navy be able to cover the targets assigned?

Second, if we have no START Treaty, will the Navy be able to keep Poseidon boats in service with enough warheads?

Secretary **Garrett**. Before I answer your questions I want to correct an apparent misconception regarding the accuracy of the W-76 warhead on the Trident II (D-5) missile. Although we have not conducted as extensive testing with the W-76 warhead as that with the W-88, preliminary results indicate that [deleted] on the Trident II (D-5) missile. For comparison, W-76 warhead on Trident I (C-4) missiles have a circular error probable (CEP) of [deleted] while those on Trident II (D-5) missiles will have a CEP [deleted]. As a result, W-76 warheads on Trident II (D-5) missiles are at least [deleted] lethal than those on Trident I (C-4). They will be able to inflict a 90 percent probability of kill (PK) to any targets with hardness less than [deleted]. I am sure you will agree that this is a significant military capability improvement.

With regard to target coverage, the key is that Trident II missiles with W-88 warheads are not replacing an existing capability. Rather, they are providing a new capability; to hold the full spectrum of Soviet targets at risk from a survivable and enduring platform, capable either of prompt execution or of being withheld almost indefinitely. Thus the lag in restoring production at Rocky Flats does not [deleted]. From the perspective of target coverage, as you noted, the Trident II (D-5) missiles will be equipped with either W-88 or W-76 warheads and there are sufficient W-88 and W-76 warheads to fully load out all 18 Trident SSBNs [deleted]. Thus, until Rocky Flats reopens, the number of deployed warheads will be as planned.

Navy's force structure planning, while keeping an eye toward the possibility of a START Treaty, does not assume its existence. Poseidon SSBNs are being retired for budgetary reasons and as they reach the end of their service life. We are confident that the programmed force structure will be adequate to continue to deter the Soviets and fulfill national warfighting goals, with or without a START Treaty.

ADVANCED WARNING SYSTEM (AWS)

Senator **Thurmond**. Secretary Rice, I understand that the follow-on system to the Defense Support Program (DSP) is undergoing final review. Can you tell us how the follow-on program or Advanced Warning System will be structured? Can you also tell the committee how the $210 million authorized for the Advanced Warning System is being obligated this fiscal year?

Secretary **Rice**. The Air Force terminated AWS due to high cost and the changing Soviet threat. In its place, we are working out details of a competitive program for a Follow-On Early Warning System (FEWS). The initial FEWS satellites and ground system will be developed to overcome the most significant deficiencies of the existing DSP system and will provide a more capable system out to 2010. The design will also have the growth potential to eventually meet full requirements in the future. The $210 million authorized by the Armed Services Committee for AWS for fiscal year 1991 will still be used for the follow-on system to DSP. The two ongoing contracts will be completed by June 1991 with the remaining funds added to fiscal year 1992 funding to start new contracts for the FEWS program.

ANTI-SATELLITE PROGRAM

Senator **Thurmond**. Secretary Stone, does the Army still support the requirement for an Anti-Satellite system to counter overhead threats?

Secretary **Stone**. Yes, the requirement for an Anti-Satellite system to counter overhead threats is specified in the JCS approved USCINCSPACE Mission Need Statement, Multicommand Required Operational Capability, and Kinetic Energy near term requirements for a space control Anti-Satellite capability.

QUESTIONS SUBMITTED BY SENATOR TRENT LOTT

ENVIRONMENTAL CLEANUP

Senator **Lott**. Secretary Stone, under DOD management, the Army is the execution agent and manager of cleanup actions at the Formerly Used Defense Sites (FUDS) program. Since the Department has been present at a number of sites in history, the magnitude of this issue could be substantial.

a. Is this issue under control at former sites or still expanding?

b. Since there are limited funds and active sites also require cleanup, do you believe corrective actions are balanced and addressing the worst sites first, regardless of whether they are active or formerly used?

Secretary **Stone**. The scope of the FUDS program comprises approximately 7,000 properties throughout the United States and its territories. We do not expect any significant increase in the total number of sites. However, we have only initiated assessments at about half of the sites. As a result, the amount of funding that will be required to remediate any contamination found can only be extrapolated from our experience to date. Of the sites evaluated thus far, about 29 percent were found to require some degree of cleanup. The total program cost for FUDS is estimated to be $2-3 billion.

We have striven to have a balanced program between the active sites and the FUDS. Initially, the active sites program received the bulk of the funding because of the "worst-first" philosophy. More recently, there has been an increase in FUDS funding to speed up the initial assessments of the FUDS sites so that we may determine the urgency of corrective actions. We expect to complete all assessments by the end of fiscal year 1994. Although the annual work plans for the active sites and the FUDS are developed separately, oversight of both plans is vested in the same office to ensure that the programs are balanced.

ACCOUNTING FOR DEFENSE BUSINESS OPERATING FUND (DBOF)

Senator LOTT. A large degree of consolidation and grouping of support, construction, and personnel funding has been made at the DOD level, after the individual services submitted their budgets. These funds have been placed in the Defense Business Operating Fund (DBOF).

When the budget requests are reviewed by Congress, we will examine the funds under both the original and grouped titles. It is not clear at this time how the funds will be authorized and appropriated.

Do you have a preference on how the funds should be reviewed and reported back to your services?

Secretary STONE. The fiscal years 1992-1993 President's budget displays certain costs of operating Depot Maintenance, Supply, Transportation, and Industrial Plant Equipment functions in the Defense Business Operations Fund (DBOF). Although we changed the name to a consolidated single account, the information provided to Congress is essentially the same as before. The significant difference is the establishment of capital investments within the fund. Army appropriations continue to go to customer accounts to pay for the products and services of the fund. Since the Army budget has been configured to reflect the Defense Business Operations Fund structure, it would be extremely difficult to reassemble all the pieces into their original source appropriations. Therefore, it would be better to review resources in their current Defense Business Operations Fund budget structure.

DBOF

Senator LOTT. A large degree of consolidation and grouping of support, construction, and personnel funding has been made at the DOD level, after the individual services submitted their budgets. These funds have been placed in the Defense Business Operating Fund (DBOF). When the budget requests are reviewed by Congress, we will examine the funds under both the original and grouped titles. It is not clear at this time how the funds will be authorized and appropriated. Do you have a preference on how funds should be reviewed and reported back to your services?

Secretary GARRETT. We have no preference, but would anticipate funds would be reviewed and reported back such that they track with the President's and OSD budget submission.

ACCOUNTING FOR DEFENSE BASE OPERATING FUND (DBOF)

Senator LOTT. A large degree of consolidation and grouping of support, construction, and personnel funding has been made at the DOD level, after the individual services submitted their budgets. These funds have been placed in the Defense Business Operating Fund (DBOF).

When the budget requests are reviewed by Congress, we will examine the funds under both the original and grouped titles. It is not clear at this time how the funds will be authorized and appropriated.

Do you have a preference on how the funds should be reviewed and reported back to your services?

Secretary RICE. We support the budget as structured by the DOD and submitted by the President. For the most part these are simply changes in the way we finance these key support activities, not major changes in scope or content of these operations. In accordance with DOD commitments, we are preparing justification material for the DBOF overview that will provide at least the same level of detail as provided in prior budgets. For example, we will continue to identify construction projects, equipment purchases, etc., as we did previously in the military construction or procurement appropriations. Since revolving fund operating budgets are not directly authorized or appropriated by Congress, we are essentially asking Congress to review and approve or disapprove the projects in conjunction with the authorization and appropriation of the DBOF customer appropriated financing. This approach was used in the past by Congress to control the level of expenditure for the old Asset Capitalization Program for industrial operations. The only real difference is that it is a consolidated DOD request expanded to cover more business areas and military construction.

We believe that this process will allow the Congress sufficient visibility to oversee given business areas (e.g., depot maintenance) in aggregate across DOD, by service slice, and all associated capital expenditures. Part of the rationale inherent in this change in financing is to allow our managers the flexibility to manage resources smartly by optimizing available resources without arbitrary line item, appropriation specific controls. This is the same way that commercial businesses manage their resources. We strongly urge the Congress to not place arbitrary floors, ceilings, or other constraints on these business operations. The pricing structure as reflected in the customer accounts has been carefully balanced to reflect the correct mix of costs and revenue needed to finance these operations and provide the necessary level of service to these key support areas. We believe that these changes will ultimately allow us to provide the required products or services at less cost. Toward this objective we have included a 1 percent fiscal year 1993 (growing to 5 percent by fiscal year 1997) productivity saving in our budget for this initiative, over and above all other improvement initiatives already captured in our budget.

[Whereupon, at 12:47 p.m., the committee adjourned, to reconvene upon the call of the Chair.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEARS 1992 AND 1993

THURSDAY, APRIL 11, 1991

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

U.S. MILITARY STRATEGY, FISCAL YEARS 1992-1993

The committee met, pursuant to notice, at 2:31 p.m. in room SR-222, Russell Senate Office Building, Senator Sam Nunn (chairman) presiding.

Committee members present: Senators Nunn, Exon, Levin, Glenn, Warner, Thurmond, Cohen, Mack, and Smith.

Committee staff members present: Arnold L. Punaro, staff director; Andrew S. Effron, general counsel; Richard D. DeBobes, counsel; and Lucia M. Chavez, research assistant.

Professional staff members present: Robert G. Bell, Richard E. Combs, Jr., Richard D. Finn, Jr., Creighton Greene, John J. Hamre, David S. Lyles, and Michael J. McCord.

Minority staff members present: Patrick A. Tucker, minority staff director and counsel; Romie L. Brownlee, deputy staff director for the minority; Claire M. Kelly, special assistant; Brian D. Dailey, Judith A. Freedman, Ronald P. Kelly, George W. Lauffer, John E. Mansfield, Durwood W. Ringo, Jr., Mark B. Robinson, and Ann Elise Sauer, professional staff members.

Staff assistants present: Kelli J. Corts, Sarah C. Hoyt, and Cindy Pearson.

Committee members' assistants present: Andrew W. Johnson, assistant to Senator Exon; Kenneth N. Luongo, assistant to Senator Levin; Phillip P. Upschulte, assistant to Senator Glenn; Leon S. Fuerth, assistant to Senator Gore; Terence M. Lynch, assistant to Senator Shelby; Melvin G. Dubee, assistant to Senator Byrd; Dale F. Gerry, assistant to Senator Cohen; Thomas G. Moore, assistant to Senator Wallop; Samuel D. Adcock, assistant to Senator Lott; Eric H. Thoemmes, assistant to Senator Coats; Ross Lindholm, assistant to Senator Mack; and Thomas L. Lankford, assistant to Senator Smith.

Chairman NUNN. The committee will come to order.

OPENING STATEMENT OF SENATOR SAM NUNN, CHAIRMAN

Chairman NUNN. The committee meets today to conduct a hearing on the new U.S. military strategy and its relationship to the

Future Year Defense Program, which covers fiscal years 1992 through 1997.

This committee has long approached our decisions with the basic and fundamental premise that military strategy should precede budget decisions and plans and also that there must be a realistic link between the threat, the strategy and the budget.

Today's hearing will examine this fundamental that we believe is so important.

On August 2 of last year, the day Iraq invaded Kuwait, President Bush delivered a speech in which he provided the outlines, broad outlines, of his new military strategy. Of course, the events in Southwest Asia basically blocked out much public attention or review at that time.

In February of this year, Secretary Cheney provided at the request of this committee, a more detailed explanation of this National Military Strategy. I was impressed with Secretary Cheney's presentation, and I know that our two witnesses today have been heavily involved in this work.

The purpose of today's hearing is to go into more detail on the military strategy to determine what the fundamental changes are. We will also look at the threat assumptions and programmatic and budgetary implications of this defense strategy, both in the 1992–1993 request and the following 4 years which make up the Five Year Defense Plan.

The committee received the Six Year Defense Program, which the law requires, on March 4, 1991.

In preparation for our hearing, Senator Warner and I wrote to the witnesses and indicated that the committee wanted their testimony to cover a number of detailed questions, including, but certainly not limited to, first: what are the key elements of our new military strategy, and how does this strategy differ from our previous military strategy? Second, what warning time assumptions guided the Defense Department in determining the balance between forward deployment and reconstitution of conventional forces. Third, what impact has this new military strategy had on the requirements for, and development of, new weapons systems or the change in the performance goals for weapon systems currently in development.

Next, if the Future Year Defense Program is implemented as a 6 year program, and assuming it is pretty much along the lines outlined by the Department of Defense request, could the Defense Department successfully undertake an operation like Operation Desert Shield/Desert Storm say 3, 4 or 5 years from now? If not, what deficiencies would result from implementation of the pending Future Year Defense Program? And, what is the relationship between the new military strategy, the Future Year Defense Program and the force packages and supporting capabilities outlined by General Powell in his posture statement?

I would ask unanimous consent that the letters of invitation from Senator Warner and myself be placed in the record at the appropriate place.

Without objection, they will be.

[The information follows:]

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC, March 25, 1991.

Hon. PAUL WOLFOWITZ,
Under Secretary of Defense for Policy,
Department of Defense,
Washington, D.C.

Dear Mr. Secretary: The Committee on Armed Services is conducting a comprehensive series of hearings on world-wide security developments, including changes in the Soviet Union and Eastern Europe, in order to fully evaluate the Department of Defense's budget request for fiscal years 1992-1997. The Department has stated that the FY1992-1997 plan is based on an analysis of the capabilities needed to support the new U.S. defense strategy, which has been formulated to counter the threats likely to concern the nation throughout the 1990s. We would like to invite you to testify with Admiral Jeremiah, the Vice Chief of the Joint Chiefs of Staff, on April 11, 1991 at 2:30 p.m. in Room 222 of the Russell Senate Office Building. During the course of your testimony, we would like you to address the following questions:

- What are the key elements of our new military strategy and how does this strategy differ from our previous military strategy?
- What warning time assumptions guided the Department in determining the balance between forward deployment and reconstitution of conventional forces?
- What impact has this new military strategy had on the force structure of the military departments?
- What impact has this new military strategy had on requirements for, and development of new weapon systems or to change the performance goals for weapon systems currently in development?
- To what extent has Desert Shield/Desert Storm confirmed or altered the new military strategy? What deficiencies in our ability to carry out that strategy were revealed by Operation Desert Shield/Desert Storm?
- Desert Shield/Desert Storm was characterized by unprecedented international cooperation. What assumptions about international cooperation are incorporated in this strategy and in the FYDP?
- Does the new strategy envision greater use of "access" agreements modeled on the 1980 arrangements with Kenya and Oman and prepositioning of equipment rather than traditional "base rights" agreements?
- To what extent is the strategy dependent on successful conclusion of ongoing arms control negotiations? Does the strategy need to be reconsidered, or the FYDP restructured, if current arms control negotiations break down?
- If the Future Year Defense Program is implemented as planned, could the Department successfully conduct an operation like Desert Shield/Desert Storm five years from now? If not, what deficiencies would result from implementation of the pending Future Year Defense Program?
- What is the relationship between the new military strategy, the Future Year Dense Program, and the force packages and supporting capabilities outlined by General Powell in his posture statement?
- What assumptions about Total Force Policy are embedded in the new military strategy and the FYDP?

We hope to conduct as much of the hearing as possible in open session. We will, however, leave a period at the end of the hearing for discussion of classified issues if that proves necessary.

If you have any questions about the hearing, please do not hesitate to contact us or Mr. John Hamre of the Committee staff. We look forward to your testimony.

Sincerely,

SAM NUNN,
Chairman.
JOHN W. WARNER,
Ranking Minority Member.

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC, March 25, 1991.

Adm. DAVID E. JEREMIAH, USN,
Vice Chairman, Joint Chiefs of Staff,
Department of Defense,
Washington, D.C.

Dear Admiral Jeremiah: The Committee on Armed Services is conducting a comprehensive series of hearings on world-wide security developments, including changes in the Soviet Union and Eastern Europe, in order to fully evaluate the Department of Defense's budget request for fiscal years 1992-1997. The Department has stated that the FY1992-1997 plan is based on an analysis of the capabilities needed to support the new U.S. defense strategy, which has been formulated to counter the threats likely to concern the nation throughout the 1990s. We would like to invite you to testify with Mr. Paul Wolfowitz, the Under Secretary of Defense for Policy, on April 11, 1991 at 2:30 p.m. in Room 222 of the Russell Senate Office Building. During the course of your testimony, we would like you to address the following questions:

- What are the key elements of our new military strategy and how does this strategy differ from our previous military strategy?
- What warning time assumptions guided the Department in determining the balance between forward deployment and reconstitution of conventional forces?
- What impact has this new military strategy had on the force structure of the military departments?
- What impact has this new military strategy had on requirements for, and development of new weapon systems or to change the performance goals for weapon systems currently in development?
- To what extent has Desert Shield/Desert Storm confirmed or altered the new military strategy? What deficiencies in our ability to carry out that strategy were revealed by Operation Desert Shield/Desert Storm?
- Desert Shield/Desert Storm was characterized by unprecedented international cooperation. What assumptions about international cooperation are incorporated in this strategy and in the FYDP?
- Does the new strategy envision greater use of "access" agreements modeled on the 1980 arrangements with Kenya and Oman and prepositioning of equipment rather than traditional "base rights" agreements?
- To what extent is the strategy dependent on successful conclusion of ongoing arms control negotiations? Does the strategy need to be reconsidered, or the FYDP restructured, if current arms control negotiations break down?
- If the Future Year Defense Program is implemented as planned, could the Department successfully conduct an operation like Desert Shield/Desert Storm five years from now? If not, what deficiencies would result from implementation of the pending Future Year Defense Program?
- What is the relationship between the new military strategy, the Future Year Dense Program, and the force packages and supporting capabilities outlined by General Powell in his posture statement?
- What assumptions about Total Force Policy are embedded in the new military strategy and the FYDP?

We hope to conduct as much of the hearing as possible in open session. We will, however, leave a period at the end of the hearing for discussion of classified issues if that proves necessary.

If you have any questions about the hearing, please do not hesitate to contact us or Mr. John Hamre of the Committee staff. We look forward to your testimony.

Sincerely,

SAM NUNN,
Chairman.
JOHN W. WARNER,
Ranking Minority Member.

Chairman NUNN. I particularly wanted Admiral Jeremiah to provide more detail on the force packages that General Powell has outlined, particularly as they appear to imply major changes in the unified command plan, as well as at least implied changes in roles and missions of the services.

Our witnesses for this afternoon's hearings are Dr. Paul D. Wolfowitz, Under Secretary of Defense for Policy, and Adm. David E. Jeremiah, Vice Chairman of the Joint Chiefs of Staff.

These two individuals personify the link between policy and programming and budgeting in the Defense Department and are best able to discuss the new strategy and its programmatic and budgetary implications.

Both of you, in my view and I think in the views of the members of the committee, are to be highly commended not only for your key roles during the Operation Desert Shield/Desert Storm contingency and actual operation, but for your leading edge efforts to formulate a new strategy and to conform the programs and the budgets to it.

I know this is one of the first tasks, Paul, that you undertook 2 years ago, and I know that it is difficult to move the bureaucracy and the system in new directions. Today's strategy and budget plan, as I view it, are a very large improvement over where we were last year at this time and I know that both of you and your staffs have had a major role to play in that great improvement.

Senator Warner, before we proceed, let me ask you if you have any opening remarks.

Senator WARNER. I thank you very much, Mr. Chairman. I basically join you in your observations and ask that my opening statement be placed in the record. But I will add this observation.

As we proceed annually to formulate the defense budget, and more specifically as Congress proceeds to evaluate that budget and leave thereon its own impressions, the foundation of all of this work is the strategy and incorporated therein is the threat assessment. So those are the two analyses which provide the foundation on which we should, as executive and legislative branches, join to formulate the annual budget.

Therefore, I share with the Chairman the importance that you are about to deliver today your thoughts on behalf of the Secretary and the President about the strategy, as you foresee it, in the future and how we should have the budget conform to that strategy.

I hope in the course of the day you will provide your own personal views as to the extent to which the strategy and the threat did result in the formation of this budget.

Thank you.

[The prepared statement of Senator Warner follows:]

PREPARED STATEMENT BY SENATOR JOHN W. WARNER

Mr. Chairman, I am glad that we have decided to hold this hearing to assess how well the Future Year Defense Plan for 1992 through 1997 coincides with the new defense strategy, which has been described by the Secretary of Defense and on which the Chairman of the Joint Chiefs and others have elaborated.

As you know, Mr. Chairman, you and I have shared an interest for a long time in how well our military strategy matches up with the resources made available to the Department of Defense.

In fact, I proposed legislation several years ago requiring the administration to provide a foundation document on National Security Strategy each year along with the budget submission. This legislation was eventually included as a part of the Goldwater-Nichols Defense Reorganization Act.

Unfortunately, no administration has been able to respond very punctually to this requirement and I regret to say that the report has still not been received this year.

This may well be a reflection of the fact that, with very rare exception, Congress usually changes the planned defense resource level every year with little regard to the strategy. Perhaps, if we in Congress made our resource decisions more tied to strategy, it would be easier for the administration to connect the two. In any event, I agree that we should attempt, insofar as possible, to determine how well our strategy compares to the resources available.

We must bear in mind, however, that the world remains a dangerous and uncertain place. I want to take a moment to quote from the additional views of eight of the minority members of this committee which were included in the Defense Authorization Act last year:

"We hail the march of democracy in Eastern Europe and do not disagree that defense spending will and should reflect the lowering level of threat in that area of the world. Many of the reductions proposed in this bill are justified by the dramatic disintegration of the Warsaw Pact. However, until the Soviet political situation becomes more predictable and stable, U.S. defense spending must be maintained at a level sufficient to deter and counter actual Soviet military capabilities, not Soviet expressions of intent."

I do not believe the political situation in the Soviet Union today is any more predictable or stable than it was last year.

With respect to regional threats, I will again quote from the same additional views:

"An examination of regional threats to Western interests shows that the world has not become a safer place for the West in areas outside of Europe. Unfortunately, the dramatic changes we have witnessed in Europe have yet to spread to other regions of the world. Therefore, we do not agree with the assessment that developments around the world—not just in Europe—justify fundamental changes to U.S. national security policy and military strategy."

It is significant that these views were expressed several months before Saddam Hussein's forces invaded Kuwait.

As we continue to reduce defense spending in an increasingly unpredictable and unstable world, I believe that we must proceed with caution. We must retain the flexibility that is critical to our ability to react in another Persian Gulf type situation. As Winston Churchill so wisely stated:

"There are two supreme obligations of government. They are of equal importance. One is to strive to prevent war and the other is to be ready if war should come."

Chairman NUNN. Thank you, Senator Warner.

I would like to include the prepared statement of Senator Dixon at this point.

[The prepared statement by Senator Dixon follows:]

PREPARED STATEMENT BY SENATOR ALAN J. DIXON

Mr. Chairman, it is a pleasure to have with us today the Under Secretary of Defense for Policy, Paul Wolfowitz, and Adm. David E. Jeremiah, Vice Chairman of the Joint Chiefs of Staff.

I look forward to hearing from them about the major elements of our national security strategy and our force structure plans.

I particularly want to focus on force structure, especially as we draw down the force. I want to ensure there is enough emphasis on readiness, sustainability and support; we must make sure we do not end up with a hollow force.

I also want to focus on our ability to move our troops and materiel in a crisis on short notice over long distances. Although our record in Desert Shield/Storm on the surface appears favorable, we must remember that 50 percent of our sealift was with foreign flag ships. We also must remember that the airlift was not forced to operate in a hostile environment.

Finally, I continue to be concerned about the future vitality and responsiveness of our industrial base. I understand we will not have the next generation of many major systems for quite a few years down the road, and yet we are stopping production on many of our current systems. Will the industrial base be there when we go to the next generation of systems, or will most of the companies be out of business?

I look forward to the testimony of our distinguished panel.

Thank you, Mr. Chairman.

Senator NUNN. Mr. Secretary, we'll start with you. I know you have a full statement. We would welcome all or any part of it, and if you would like to put the other parts into the record, we will be glad to do that, however you would like to proceed.

STATEMENT OF HON. PAUL D. WOLFOWITZ, UNDER SECRETARY OF DEFENSE FOR POLICY

Mr. WOLFOWITZ. Thank you, Mr. Chairman and Senator Warner. It is a great pleasure to be before this distinguished committee today on such an important subject and to be joined by my very distinguished colleague, Admiral Jeremiah.

As you may recall, Mr. Chairman, Senator Warner, I was with Secretary Cheney and General Powell when they first came up to brief you and other members of the Armed Services leadership on the new defense strategy on August 2, the day President Bush first publicly discussed it in a speech in Aspen, Colorado. You may recall that date because that, of course, was the same day that Saddam Hussein invaded Kuwait. Indeed, I was surprised that we did spend half the meeting on the new strategy and the other half—

Senator WARNER. Mr. Chairman, could we interrupt the witness to guide the members of the committee?

Are you going to follow your larger statement, which is before us? That is entirely satisfactory to this Senator. Or are you going to use it as a base document and then move about?

Mr. WOLFOWITZ. What I would like to do is move through it. I will indicate where I am skipping over parts for the record.

Senator WARNER. Thank you. That would be helpful.

Mr. WOLFOWITZ. What I would like to do today is to summarize some key changes in the international environment and the main elements of our new strategy and to discuss a subject that I know the committee is very interested in, that is, our assumptions and conclusions in the light of developments in the Soviet Union and in the light of the recent conflict in the Persian Gulf.

If you would permit me one more reminiscence, it was almost exactly 2 years ago, 1 week short of it, that I had the pleasure of appearing before this committee for my confirmation hearing. During that process, it was repeatedly stressed to me by many members of this panel the importance of a strong and vital link between strategic planning and the budget process, the importance particularly of improving our strategic planning in the face of major changes in the international environment.

I must say that I took very full heed of those concerns as I appeared before this committee then, and I remember very well my promises to you, and to your staff, that we would make a serious effort in my office to place strategic planning and its links with the budgeting process in the forefront of our attention.

I am particularly pleased, therefore, that my office has been able to contribute to what I think has been a truly extraordinary effort by the Department of Defense to redirect our strategy and reduce our force structure in a fashion that is as radical and dramatic, I believe, as the changes in the strategic environment.

Of course, it is a relatively easy task to perform when the Department enjoys the kind of leadership that Secretary Cheney and

General Powell have been giving it, not only in facing immediate crises, but in looking forward to the future.

Indeed, I think the very significant testimony by Secretary Cheney before this body on February 21 demonstrates how serious he is about planning and about its links to the budget.

I was, therefore, particularly pleased to hear the compliments that Secretary Cheney and General Powell received on their testimony from so many distinguished members of this committee, for those compliments were, I think, a measure of the extent to which others have come to acknowledge the increased role that strategic planning has played in the Department.

I am sure there will be issues about which we disagree. But our debates will benefit from the articulation of a coherent, forward-leaning vision, designed to reflect a changing world developed over many months, already I think tested in world events and articulated so forcefully by the Secretary and the Chairman in this latest series of hearings.

Mr. Chairman and members of the committee, I think one measure of the magnitude of the changes that we have in mind is a kind of quantitative measure, that we are, in fact, at a time when we are still in the process of bringing home half a million servicemen and women that were deployed to the Persian Gulf, planning over the next 5 years to reduce our Armed Forces by roughly that same amount, a half million.

But the change is not only quantitative; the change is a whole reshaping of our strategy and a refocusing of our force structure. That these changes were proposed in the middle of a major conflict in an era that has repeatedly demonstrated the uncertainty of prediction and on the verge of a military technological revolution only underscores the challenge of what we are undertaking.

I would like first, Mr. Chairman, to summarize what I think are the three fundamental trends at work, interlocking trends, that have led to this change in strategy. The first, and by far the most important in its strategic consequences, has been the developments in the Soviet Union and Eastern Europe. They are the basis on which we believe we can prudently contemplate this rather enormous reduction in force structure. But those changes themselves have, within the last half year or so, come under an increasing shadow of uncertainty from disturbing trends in the Soviet Union.

The second trend has been the emergence of increasingly threatening regional powers and, indeed, as we were developing the strategy in the early part of last year, it's no secret now that Iraq was probably at the head of the list of the countries that we were concerned about.

We have been through a major experience now with a regional conflict and I would like to reflect on that.

Finally, not unimportant, but I think not quite of the same magnitude, we have increasingly capable friends and allies and we are, indeed, able to shift some burdens to them.

First, with respect to those most dramatic developments in the Soviet Union and Eastern Europe, a momentous event occurred 3 weeks ago. The President of Czechoslovakia addressed the NATO Council. President Havel noted the euphoria and disappointments of the past year. "When the totalitarian systems collapsed in Central and Eastern Europe and democracy won," President Havel said, "everything seemed to us, in the first exciting weeks and months of freedom, clear and simple. A year full of dramatic events has passed, and we now see that history is going, after all, through a much more winding and complicated path than we thought in the first moments of excitement."

I am going to try very briefly to summarize what is in the next few pages of my testimony with two basic statements. But I think that quote from President Havel in a way summarizes it most eloquently. We have seen dramatic changes, changes I think none of us truly expected to see in our lifetimes, and those changes permit us to reap enormous strategic benefits as well as political, moral, and economic benefits. But at the same time, in the last 6 months, developments inside the Soviet Union have been a reminder that we are a very long way from the permanent solution to the problems that Soviet power poses for the world, and particularly for Europe.

We continue to face the fact that, despite the demise of the Warsaw Pact, which I think was officially buried on April 1 as a military alliance, we nonetheless confront a Soviet Union that remains and is likely to remain for the foreseeable future the largest military power on the Eurasian land mass, and a Soviet Union that we can say has at best an uncertain future.

Let me move to page 7 of my statement, Senator Warner, and talk a bit about regional conflicts.

While we have seen a dramatic reduction in the threat posed by the Soviet Union and particularly the Soviet Union and the Warsaw Pact of old, unfortunately it seems to be the case that a number of Third World countries have become increasingly capable militarily and increasingly capable of threatening us.

In one respect, the developments in the Soviet Union have presented us with a favorable picture in regional conflicts because one result of the new era in superpower relations is that we can now treat these regional interests independent of the East-West context. In some cases, for example in Southern Africa, Central America, and most vividly in the Persian Gulf, we have even found a level of cooperation with the Soviets in seeking a solution to these conflicts.

Another consequence of a less aggressive Soviet policy abroad is a reduction in military supplies and ideological support for anti-Western insurgencies.

At the same time, the many regional, ethnic and national antagonisms around the world for which the Soviets are not the driving force, feed on distinct and diverse local sources of oppression, instability and grievances. There is even a risk that in some cases the relaxation in superpower confrontation may unleash destructive forces that were previously kept in check.

I believe our success in Desert Storm should make all potential aggressors in areas of concern to us think twice. We also hope events in Iraq will demonstrate to potential arms suppliers the importance of efforts to control the proliferation of weapons, particularly weapons of mass destruction. These post-Desert Storm developments may ameliorate, but they will certainly not eliminate, our concerns about regional contingencies. Our planned force structure, as I will discuss in a moment, considers the likely size and the warning associated with those regional threats.

Finally, to summarize this discussion of trends, I would note that I have a brief discussion in my statement about the role our allies can play. This committee has heard from me at great length about the plans we have in East Asia to reduce our presence there by slightly more than 15,000 people in just the next 2 years, based on the fact that our allies, particularly our Korean allies, are able to assume a leading role in their defense.

But I would also like to call particular note to the contribution our allies have made to the Desert Storm operation, not only the very significant combat contributions a number have made, but a truly extraordinary financial contribution. As we were discussing this subject in preparation for my testimony, someone pointed out that if you total up the amounts that have been pledged by our various partners to contribute to the costs of Desert Storm, you will get a number of $54 billion. It would, by a considerable margin, be the world's largest defense budget, behind only ourselves and the Soviet Union. It is a truly extraordinary effort in burdensharing and in cooperation. I think, while perhaps not looming as large as a number of even more extraordinary things that have happened in the last few months, it deserves some special comment.

Senator **Warner**. Now that is Desert Shield and Desert Storm together, combined?

Mr. **Wolfowitz**. Yes, together.

Senator **Warner**. You used the one phrase only, Desert Storm.

Mr. **Wolfowitz**. That's right. I'm sorry. If you just take Desert Storm, I think the number is $45 billion, which is still larger than the third ranking defense budget.

These three trends—changes in the Soviet Union and Eastern Europe, significant regional challenges, and increasingly capable allies—play a central role in our strategic planning. The major downsizing and refocusing of our forces are largely based on the implications of these three. We believe that the implications of these trends, evaluated in the context of our new strategy, enable us to reduce force structure and programs and thus, Senator Warner, meet stringent budget restrictions, but only barely and with some increased risk. We believe that risk to be acceptable, but if trends in the strategic environment were to take ominous unforeseen twists, we would need to rethink the course that we are on.

These developments are all the more challenging because of the continuing uncertainty that we face in the world, both politically and technologically. It is an old saw, but nonetheless true, that defense planners have to focus more on capabilities than on intentions. It is not that intentions are entirely unpredictable, nor that we can never place any reliance on them. But they are subject to changes in circumstances or changes in political leadership that can take place much more rapidly in the time it takes to build high quality forces or to develop advanced technology.

Less than a month before Saddam Hussein surprised the entire world with his invasion of Kuwait, Margaret Thatcher addressed the historic post-Cold War NATO summit and noted to her assembled colleagues that we were on the eve of a promising new era—

an era, as she said, every bit as promising as those that beckoned in 1919 and 1945. As history shows, it is very difficult to predict future threats, especially amid the euphoria of a great victory, whether predicting over the long-term, from 1919 to Hitler's accession in 1933, or over the shorter-term, from 1945, when peace seemed at hand in Europe, to the beginning of the Cold War just a few years later, or even the very short term, from November 1989 to August 1990. It is a reminder of the uncertainty that rules in the environment we face.

A second great uncertainty is the nature of future warfare itself. As Operation Desert Storm so vividly demonstrated, advanced technology, high-quality personnel to operate the technology, and innovative doctrine to guide its employment are critical to military success. We are in a period of particularly rapid technological change. Stealth, precision guided munitions, and advanced sensor technologies all proved their value in the Gulf. But we are not the only ones who will learn that lesson.

The Soviets, whose military leaders first coined the phrase the "military technological revolution," were watching closely. Indeed, I would call your attention to a rather remarkable letter that Marshal Akhromeyev wrote today to the Wall Street Journal. I don't recall a previous time when a Soviet marshal felt called upon to write to an American newspaper to correct our assessment of trends in military technology.

The Soviets are watching closely. Other potential regional adversaries have certainly watched closely. Whether we keep up or not, they will surely continue to push the frontiers in technology and military doctrine to develop capabilities of their own.

Mr. Chairman, the next section of my testimony I would like to submit for the record. It is principally a review, and some of it I think you have heard already from Secretary Cheney about the principal elements of our new strategy. But I would like to just focus on two parts of that testimony. The first concerns forward presence in my statement.

I want to stress this because it is important to our strategy, it is important to our force structure calculations, and I believe that forward presence may be one of the least appreciated elements of our strategy. It is an essential element, however, and it is important as we draw down our forces to make sure that we do not do so too precipitously, and that we do not, in the process of reductions, undermine the extraordinary stability that we have helped to create in Europe and in Asia.

Our presence in Asia is already stretched very far, and we are reducing extremely rapidly in Europe. Forward presence, if I could use the analogy that Secretary Cheney used before this committee, is a lot like thin ice. You don't know you've gone too far until you fall through.

I would also like to touch on a few aspects of warning in our new strategy because I know that was a particular concern of the committee in its letter of invitation.

When we look at regional conflicts, one element that is likely to be a constant is that warning will be short and perhaps ambiguous. Therefore, our forces must be highly mobile and ready.

In early phases, combat forces should come primarily from the Active forces. We also learned from Desert Storm that even regional crises can require a very large military operation on our part, one in which we must be prepared to face chemical, biological and even nuclear weapons.

But another element of our strategy, reconstitution, looks at warning from a different perspective. As a result of those dramatic changes in the Soviet Union and Eastern Europe, we now expect to have lengthy strategic warning of any renewed threat of a massive Soviet assault on Western Europe or a global war. It is these changes in warning that have allowed us to plan to reduce our Active and Reserve force structures to meet the forward presence and crisis response requirements of our strategy.

To preserve the capability for timely force reconstitution, we must take care to protect certain long-lead elements of force structure. Most important among these elements are major weapon systems, which take a long time to build or recommission, and, even more important, I would say, and perhaps even longer to rebuild, the highly skilled personnel, whose leadership or technical abilities require many years of training and experience.

As part of our reconstitution capability, we must maintain a robust R&D program to advance our competitive edge in key areas of warfare through innovations in areas like platforms, sensors, and subsystems, but also in the areas of doctrine and operational innovation necessary to take full advantage of technological progress.

I would like to summarize a little bit the considerations that have gone into going from our strategy to sizing our force structure, and Admiral Jeremiah will address the details of that force structure.

First, our conventional forces in our new strategy are sized to maintain forward presence in key areas of the world. This includes land-based air and ground forces, as well as maritime forces, and it is derived almost exclusively from the Active component.

As I said earlier, we believe forward presence is a key factor in promoting regional stability. It is also the "glue" that is so critical to holding together our vital alliance relationships. Our forces are sized with an adequate rotation base to support our overseas commitments. This is a very important point which deserves a brief explanation.

As critical as forward presence is to our defense strategy, we must also recognize the toll that overseas duty takes on our forces. Therefore, we must attempt to insure that the force is sufficiently large so that the individual soldier, sailor, airman or marine is not hit with back to back assignments to overseas posts.

In other words, we attempt to provide our people with a reasonable amount of time in the States between tours overseas. It is a measure that is absolutely necessary if we want to retain the quality force we desire.

Another factor in sizing our force is to maintain our flexibility to respond to one or more regional contingencies. Here we believe the country must be capable of fighting in more than one part of the world, although we no longer believe it is necessary to size the force for global war. What we do need is the capability to respond to a number of different kinds of contingencies, with the Active forces providing the majority of the combat power and Reserve forces largely supporting the first contingency and providing additional combat power and support for subsequent contingencies.

Last, to hedge against resurgent threats, we will reconstitute forces, if necessary. In some cases, this might mean creating wholly new forces. In other cases, it involves maintaining elements or "seeds" within the overall structure, primarily the reserve structure, to allow for relatively rapid expansion of the force.

As part of that, we must maintain a critical mass in key warfare areas. If we wish to remain the leaders in air-land warfare, or anti-submarine warfare, or space, or any other key warfare area, we need not only the technology, but we need skilled operators who know the environment and who are constantly innovating tactics and doctrine.

Perhaps you have heard this example before. But to me it is a very dramatic reminder that while it was the British who first fielded the tank in warfare, it was the Germans who brought in the tactical and doctrinal innovations that made the tank a decisive instrument of warfare.

We cannot simply have laboratory projects that stay on the shelf. We have to have people who figure out how to adapt and use them.

The force sizing criteria I have just outlined should not be considered additive. Many of the same forces providing forward presence will be relied upon for regional contingencies. Likewise, much of the rotation base for forward presence comprises the crisis response element of our strategy. What we have done in sizing the force is insure our ability to satisfy the requirements of our strategy by maintaining adequate levels of forces forward, sustaining a rotation base to support our forward commitments, providing enough Total Force, Active and Reserve, to respond to various contingencies, and retaining a reconstitution base against resurgent threats.

In all, we feel that the 1992-1997 Defense Program takes our conventional force structure down to a level in the mid-1990s that will be the irreducible minimum needed to support the strategic concepts we have outlined and to protect our vital interests.

Let me conclude, if I may, with some reflections on Desert Storm and its significance for our new strategy.

I would say that basically these events have not required us to go back and rewrite the strategy—indeed, far from it. I would say that the events have confirmed for us what we believe is the essential correctness of that strategy, confirming our shift in planning from a global, conventional war to a regional theater threat, while underscoring the need—and this principle is embedded in our strategy—to keep a close watch on developments in the world and be prepared to adjust our plans if major assumptions are not proven correct.

I think it is fair to point out that, when we first began to refocus our conventional force planning to regional contingencies over a year ago, there were some who accused the Department of Defense of casting about for new threats to replace the Soviets. As one newspaper put it, and I'm quoting: "Today, facing the prospect of dramatically slashed budget and forces, [the American armed forces] are busily floating new 'threat prototypes . . . .' "

So, it was in a way ironic that the day the President unveiled the new strategy based on those changes in our planning guidance, the day that we came over to the Hill to brief the congressional leadership, was August 2, the day that those regional threats hit us in the face.

There is also a lesson, I think, from that experience about uncertainty and about the difficulty of predicting intentions. Ten years ago, when I was in the Pentagon previously, some of us did suggest that Iraqi capabilities to invade the Saudi peninsula were something that we ought to worry about, and at that time, the prevailing view was that that was an implausible threat.

Senator WARNER. Whose prevailing view?

Mr. WOLFOWITZ. What prevailed in our planning guidance at the time.

From the perspective of 1980, in a way that is correct. But the decisions that were made back in the early 1980s were the decisions that helped to shape the force today. And, fortunately, the decisions that were made then to deal with a broader global threat and to deal with a Soviet threat to the Persian Gulf provided us with the capabilities with which we were able to respond.

Indeed, we were fortunate in Desert Storm to be able to build on years of preparation, under Republican and Democratic administrations, to defend vital U.S. interests in the Gulf, an area in which we have had vital interests going all the way back to the days of Presidents Roosevelt and Truman.

Mr. Chairman, I do not say this just to flatter you, but it is a fact, as you know, that we worked together back in the late 1970s, and you and other members of this committee played a big role in getting people to pay attention to the Persian Gulf at an early stage. It is under your leadership, as Chairman, and under the very distinguished leadership of the late Senator Tower, and the many other dedicated members of this committee that we built up the forces over a long period of time which we used in a circumstance that could not easily be foreseen.

We need to maintain that long view as we go into the future.

I know the committee is interested in the question of whether we could perform a Desert Storm-like operation with the base force we are planning for in 1995. As the Secretary and the Chairman have said on several occasions, the answer is that we could perform a similar operation, but it would be more difficult and would involve some increased risks elsewhere in the world.

We will have the ability to deploy a similarly sized force 5 years from now, but only with much greater stress on our other forward commitments. Further, such a deployment would leave us with minimum active ground forces or tactical air wings in the United States. Therefore, we would have to consider mobilization of even larger reserve forces as an added hedge against risks in other theaters.

But let me emphasize, also, that I think it would be a mistake to focus too much on Desert Storm as the exclusive model for future contingencies. Many elements, both favorable and unfavorable, were unique to that situation. I would also point out that, while

Saddam Hussein was fighting the last war, namely his war with Iran, we were looking to the future, and we should not fall into his trap the next time, of fighting the last war.

Chairman NUNN. Mr. Secretary, I would like to go on record as completely agreeing with that assessment. I think you are absolutely right on that. It is something that is a tendency for all of us to do. I believe that is a point that needs a lot of emphasis.

Mr. WOLFOWITZ. This is by no means to ignore the important lessons that are to be learned. This is the most extraordinary military experience we are likely to have in decades. We have learned enormous things about what works and what does not work. Indeed, we are in the midst of a major effort to try to digest that. I do not mean for a minute to say that we should put all that experience aside. But we should not become fixated on it, either.

I also believe that there are some fundamental changes brought about by our recent experience that have changed the situation in our favor, particularly in the Persian Gulf. Perhaps most important, U.S. resolve to overturn Iraq's aggression, will serve as a warning to others around the world who might be tempted to seek territorial expansion on the cheap.

More specifically, in the Persian Gulf, which is by virtue of distance and other factors one of the most demanding regions of the world for our forces to operate, we will no longer face the fourth largest army in the world. In fact, if we do have to repeat Desert Storm exactly as we ran it, it will be because the world will have made the terrible mistake of allowing Iraq once again to over-arm itself. It is to prevent such a threat that we and our allies have insisted on the stringent provisions of the United Nations Ceasefire Resolution.

Furthermore, our friends in the region have learned the risks of waiting too long before requesting our assistance. That factor should lead to security arrangements in the Gulf, including prepositioning and regular exercises and deployments, which will make it possible for us to come back much faster if our help is ever needed again.

I hope it also means that if our friends need our help, they will ask for it in a more timely way, so that our mission will be one of defense, rather than ejecting an entrenched force. We are not structuring our force on the assumption that our friends will wait until they are attacked before they call for help in the future.

But this leads me to another point which really must be kept in mind, and I am nearly at the end of my statement, about the significance of the major reductions that we are taking. We have enjoyed a lot of luxury and flexibility that comes from having this very large force planned against a very large threat. A larger force provides more flexibility to wait and act later in a crisis, and provides hedges against risk in less optimistic scenarios. With a smaller force, the risks are higher if we delay beyond the point where defense is possible and have to take offensive action.

That is just one of the ways in which smaller forces might constrain our freedom of action in the future, and we have to recognize that candidly. There is less margin for the unexpected with the smaller force that we are planning on than we have enjoyed with a force that was structured to deal with a massive global war.

The base force is indeed just that. As you are aware, under our current plan, defense outlays as a share of GNP are expected to fall to 3.6 percent in fiscal year 1996. That will be the lowest level as a percent of GNP since before World War II. The level of active military manpower will fall to around a level of 1950. Both of those dates should be reminders that we are going down to levels below which we cannot afford to go.

I would like to think that events in the Gulf have added a little realism to the heady discussions last year about how fast we could slash the defense budget. I recall one Member of Congress—and I guess it is appropriate to say here that it was, of course, in the other body—who, during the debate over transferring the 401st Tactical Fighter Wing to Italy, suggested that there were "no interesting targets left" for the 401st to hit. This was the same 401st Fighter Wing, of course, which carried out critical missions in the Gulf war.

I would ask this committee, which I know has been very helpful in our efforts to maintain prudent levels of defense spending, to continue to support us in this regard.

Thank you, Mr. Chairman, for your attention, and I will let Admiral Jeremiah go into the details of our planned force structure.

[The prepared statement of Mr. Wolfowitz follows:]

PREPARED STATEMENT BY HON. PAUL WOLFOWITZ, UNDER SECRETARY OF DEFENSE

Mr. Chairman, Senator Warner, members of the committee. I am very pleased to be here today to testify on our new defense strategy. I am joined by the Vice Chairman of the Joint Chiefs of Staff, Admiral Jeremiah, who will address in detail our planned forces to implement the new strategy.

As you may recall, Mr. Chairman, I was with Secretary Cheney and General Powell when they first came to brief you and Senator Warner on the new defense strategy on August 2, the day President Bush first publicly discussed it in a speech in Aspen, CO. You may recall the date, because that was the same day Saddam Hussein invaded Kuwait. And this committee has already heard in some detail from Secretary Cheney, in his tour-de-force review of U.S. strategy some weeks ago.

What I would like to do today is to summarize some key changes in the international environment and the main elements of our new strategy, and to discuss a subject I know the committee is interested in, that is, our assumptions and conclusions in the light of developments in the Soviet Union and the conflict in the Persian Gulf.

Two years ago, I had the pleasure to testify before this committee at my confirmation hearing. During that confirmation process, many members of this panel stressed the importance of a strong and vital link between strategic planning and the budgeting process, particularly at a time of major changes in the international environment. I took full heed of those concerns in my appearance before this committee then, and in my promises to you to place strategic planning and its links with the budgeting process in the forefront of my attention. I am particularly pleased, therefore, that my office has been able to contribute to what I believe has been an extraordinary effort by the Department of Defense, under the leadership of Secretary Cheney and General Powell, to redirect our strategy and reduce our force structure in a fashion that is as radical and dramatic as the changes in the strategic environment.

The very significant testimony by Secretary Cheney before this body on February 21, 1991, demonstrates how serious he is about planning and its links to the budget. It was, therefore, an extra source of pleasure to me to hear the compliments that Secretary Cheney and General Powell received on their testimony from so many distinguished members of this committee, for those compliments were a measure of the extent to which others have come to acknowledge the increased role that strategic planning has played in the Department. I know there will be issues about which we disagree, but our debates will benefit from the articulation of a coherent, forward-leaning vision, designed to reflect a changing world, calibrated over many months, tested in world events, and repeatedly articulated by the Secretary and the Chairman in this latest series of hearings.

To briefly recap for the committee, we began to reexamine our traditional strategy of containment in the course of the historic changes in Eastern Europe and the Soviet Union in 1989. This reassessment led us to adopt a defense strategy markedly different from the one that has guided us for 40 years. This strategy has in turn led to proposed force structure reductions of over 500,000 men and women, a force as large as that we deployed to the Gulf. That these changes were proposed in the middle of a major conflict, in an era that has repeatedly demonstrated the uncertainty of prediction, and on the verge of a military technological revolution, only underscores the dramatic nature of what is being undertaken.

These changes are possible because of and in some cases despite (1) developments in the Soviet Union and Eastern Europe, (2) changes in regional conflicts, and (3) increasingly capable friends and allies—developments that present opportunities and risks, and to which I will now turn.

THREE INTERLOCKING TRENDS

Developments in the Soviet Union and Eastern Europe

Three weeks ago a momentous event occurred: the President of Czechoslovakia addressed the NATO Council. President Havel noted the euphoria and disappointments of the past year.

"When the totalitarian systems collapsed in Central and Eastern Europe and democracy won, everything seemed to us, in the first exciting weeks and months of freedom, clear and simple. . .

"A year full of dramatic events has passed, and we now see that history is going, after all, through a much more winding and complicated path than we thought in the first moments of excitement."

The dramatic changes of the last year to which President Havel referred are well-known to this committee: the end of Communist domination of Eastern Europe, unification of Germany, Soviet unilateral force reductions, agreement on terms for broader reductions of forces in Europe, and continuing withdrawals of Soviet forces from Czechoslovakia, Poland, Hungary, and Germany, to name a few. Although I will be talking to you today about our concerns over developments in the Soviet Union, no one should underestimate the strategic significance of these changes.

As Secretary Cheney has described to you in some detail, continued turmoil and recent worrisome trends in the Soviet Union cause us great concern.

Notwithstanding Gorbachev's recent attempt to distance himself from the most extreme reactionary forces, he has yet to make public a strategy for dealing with staggering economic problems or for regenerating the process of political reform. Uncertainty plagues virtually every aspect of Soviet society. The economic situation is particularly bleak. In October 1990 the central government rejected the Shatalin plan, which most experts on the Soviet economy regarded as the program with the greatest prospect to move the Soviet economy in the direction of greater reliance on market forces. Since then, central support for economic reform has been in retreat. The prognosis now appears to be further economic decline and continued political, national and social unrest. As we meet today, labor strife troubles the coal mining centers of Russia and the Ukraine.

Political reform has also been under attack. The resignation of leading liberal figures like Foreign Minister Shevardnadze is, of course, well known, as is the crackdown in the Baltic states. The Gorbachev-sponsored referendum, while yielding results which seem to support a "renewed federation," has not resolved the fundamental political and economic issues—after all six republics did not even participate in the voting. Indeed the results of voting on supplementary questions may have strengthened the position of Boris Yeltsin and other advocates of greater republic autonomy in Russia and the Ukraine. There are vigorous campaigns of public criticism by both reactionary Communist figures and leading reformers. Many observers believe that the center increasingly relies on the traditional pillars of Soviet power—the military industrial complex, the security forces, and the Communist party apparat.

The U.S.-led coalition's success in the Persian Gulf War will have its own effects on Soviet politics. Soviet cooperation furthered success in countering Saddam's aggression. But there are some in the Soviet military who see U.S. success over a long-standing client so near to their borders as a threat to traditional Soviet interests, rather than as proof of how much can be accomplished when Cold War patterns are abandoned. In a recent Izvestiya article, Chief of the General Staff Moiseyev complained about U.S. "attempts to secure military superiority and to demonstrate its superpower status in relations with the Soviet Union."

In the absence of ongoing democratic reform the prospects for a thoroughly transformed U.S.-Soviet relationship will dramatically decline. This does not mean that we would return to the darkest days of the Cold War, but our hopes for moving from persistent confrontation to wide-ranging cooperation with the Soviet Union may be frustrated.

President Bush has said on many occasions that we hope the process of reform in the Soviet Union will succeed. We still hope it will be successful and Soviet leaders, we believe, still have it in their power to take steps which would put reform back on track.

The implications of these conflicting trends for the nature of the Soviet military threat must be weighed in several areas—uncertainty about stability in the Soviet Union and Eastern Europe, a chill in arms control, Soviet nuclear modernization and the likelihood of a continuing Soviet preponderance in conventional arms. But, the recent shifts in the Soviet Union do not change our basic assumptions about their reduced capabilities which underlie the new defense strategy. The enormous strategic consequences of the past year will greatly advance Western interests and greatly affect our defense strategy and force structure. An independent Eastern Europe offers NATO strategic separation from Soviet forces that it has always lacked. The promise of CFE-like levels of parity greatly shifts an historic imbalance. The continued economic and technological growth of free societies promises a widening of the long-term advantage this poses for the West.

Nonetheless, the recent worrisome trends in the Soviet Union underscore the prudence of our continued recognition of the still formidable capabilities that the Soviet Union will retain, and that will still make it the largest military power in Eurasia. Rather than sweeping and radical long term reductions in Soviet military capabilities, we see a pattern of stubbornly persistent military spending, even in the face of massive economic challenges. Even though Soviet foreign policy does not seem likely to revert to the depths of the Cold War, we have seen demonstrations of how rapidly policies can change. The dramatic events in the Soviet Union force us to remember that it takes us longer to rebuild our capabilities than for there to be dangerous swings in intentions.

Regional Contingencies

The dimunition in the U.S.-Soviet rivalry has mixed implications for regional conflicts—and these conflicts constitute the second of the three intersecting major trends to which I referred earlier. On the one hand, while our interests around the world were not solely the result of the U.S.-Soviet rivalry and Soviet expansionism, it was that competition which gave many of them added impetus and urgency, and raised the specter of a regional contingency escalating into global war. One result of the new era in superpower relations is that we can now treat these regional interests independent of the East-West context. In some cases, for example in Southern Africa, Central America, and most vividly in the Persian Gulf, we have even found a level of cooperation with the Soviets in seeking a solution to regional conflicts. Another consequence of a less aggressive Soviet policy abroad is a reduction in military supplies and ideological support for anti-Western insurgences.

At the same time, the many regional, ethnic and national antagonisms around the world, for which the Soviets are not the driving force, feed on distinct and diverse local sources of oppression, instability, and grievances. There is even a risk that in some cases the relaxation in superpower confrontation may unleash destructive forces that were previously kept in check.

It should be clear from history, particularly from recent history, that regional threats can arise and embroil us in conflicts with very short warning. The Soviet Union is capable of posing short warning threats to a single flank or region—a much more limited attack than the theater-wide or even global conflict we have had to worry about for over 40 years, although formidable nevertheless. But, perhaps the most sobering development is the threat of vastly larger and more sophisticated arsenals which regional powers can put into the field. Some of these will entail chemical and even biological or nuclear capabilities. Fortunately, the forces of perhaps the most serious regional threat, Iraq, have been reduced by half and otherwise substantially eliminated as a near-term external threat.

I believe our success in Desert Storm should make all potential aggressors in areas of concern to us think twice. We also hope events in Iraq will demonstrate to potential arms suppliers the importance of efforts to control the proliferation of weapons, particularly weapons of mass destruction. These post-Desert Storm developments will significantly ameliorate, but not nearly eliminate our concerns for regional contingencies. Our planned force structure, as I will discuss later, considers the likely size and the warning associated with regional threats.

Greater Allied Participation

A third, but this time unalloyedly positive development, is the increasing ability of our allies to play a leading role in defense of shared security interests. We saw a remarkable international coalition assembled in the Persian Gulf Crisis. We see growing contributions by friends and allies elsewhere, as well.

I'd like to note particularly the historically unprecedented foreign contributions to U.S. expenses in the course of Operation Desert Shield/Desert Storm. For calendar year 1990, the allies covered well over 80 percent of our incremental costs incurred in Desert Shield. In 1991, allied contributions will cover a substantial portion of our incremental expenses. The amount pledged would rank, by a considerable margin, as the world's third largest defense budget, after our own and that of the Soviet Union. Few would have imagined this level of foreign participation. There will no doubt be those who will focus attention on whether a particular country paid as much as it might have or as promptly, but these concerns—valid as they are—should not overshadow all that has been accomplished.

In other contexts, the increased abilities of our allies are making it possible for us to reduce forces and adjust our own role. In Asia, our allies can shoulder an increasing share of the responsibility for their security. As I told this committee last year, thanks in large part to the expanded defense efforts of Japan and Korea, we now plan to reduce our force levels in Asia by 15,250. These reductions clearly are an important factor enabling us to meet our global responsibilities while building down our own forces.

BUDGET REALITIES AND CONTINUING UNCERTAINTIES

These three trends—changes in the Soviet Union and Eastern Europe, significant regional challenges, and increasingly capable allies—play an important part in our strategic planning. The major downsizing and refocusing of our forces are largely based on the implications of these three. For the implications of these trends, evaluated in the context of our new strategy, enable us to reduce force structure and programs and thus meet stringent budget restrictions—but only barely, and with some increased risk. We believe the risk to be acceptable, but if trends in the strategic environment took ominous unforeseen twists, we would need to rethink the course we are on.

These developments are all the more challenging because of the continuing uncertainty we face in the world—both politically and technologically. It is an old saw, but nonetheless true, that defense planners must focus more on capabilities than intentions. It is not that intentions are entirely unpredictable or that we can never place any reliance on them. But they are subject to changes in circumstances or political leadership that can take place much more rapidly than the time it takes to build high-quality forces or develop advanced technology.

I am reminded of Prime Minister Thatcher's observation, at last year's NATO Summit, in the interlude between the fall of the Berlin Wall and the invasion of Kuwait, to the effect that we were in a promising new era—an era every bit as promising as those that beckoned in 1919 or 1945. As history shows, it is very difficult to predict future threats, especially amid the euphoria of a great victory: in the long-term, from 1919 to Hitler's accession in 1933; in the mid-term, from 1945 to the beginning of the Cold War in 1948, or the hot war in Korea 2 years later; and even in the very short term—from November 1989 to August 1990.

A second great uncertainty is the nature of future warfare itself. As Operation Desert Storm so vividly demonstrated, advanced technology, high-quality personnel to operate the technology, and innovative doctrine to guide its employment are critical to military success. They will be even more important as we move toward lower force levels.

Stealth, precision guided munitions, and advanced sensor technologies all proved their value in the Gulf—but we were not the only ones who will learn that lesson. The Soviets, whose military leaders first coined the phrase, "the military technological revolution," were watching closely, as were other potential regional adversaries. They will surely continue to push the frontiers in technology and military doctrine to develop new capabilities of their own.

Maintaining this technological and operational edge is critical on two levels: first to build upon our success in Desert Storm to deter future aggressors; and second, to provide our forces of the future with the capabilities they will need to prevail on the battlefield.

THE NEW DEFENSE STRATEGY

Our new strategy is based on the need, as Secretary Cheney told the committee, to meet certain enduring security objectives.

— To ensure U.S. security against a broad spectrum of threats in a changing but still dangerous world.

— To promote the values of political and economic freedom, both because we believe in them, and because they serve our own security.

— And to "show moral and political leadership; to reassure others of our commitment to protect our interests; and, if necessary, to respond to threats resolutely with forces for deterrence or defense."

It is a strategy which takes into account both the extraordinary changes and enduring realities within the international security environment, as well as the budget constraints we face at home. It is a strategy that requires us to assess the ongoing changes in the world even as we adjust force structure; and it provides a framework to slow our reductions and, if necessary, reconstitute our capabilities if our assumptions are not borne out.

The key elements of these strategy are: (1) our worldwide system of alliances, to protect our interests and those of our allies in critical areas of the globe; (2) U.S. forces forward deployed—albeit at lower levels—to give strength and credibility to those relationships; (3) the ability, through mobile forces and long-range power projection, to respond to regional threats; (4) robust navy to control of the oceans; (5) the capability, as we reduce forces, to reconstitute the force levels and equipment to meet a new or resurgent global threat, for example to meet a resurgent Soviet global threat; and (6) the need—in an area where we have not seen a major change in the threat—to maintain a strong strategic offensive capability, and to enhance strategic defense.

The most important new element of this strategy is the shift in focus, in our conventional force planning, from a global Soviet threat—in particular a massive, short-warning Soviet-led Warsaw Pact assault on Europe that escalates rapidly into global war—to regional contingencies. While the Soviet Union continues to maintain massive conventional forces—and while those forces could pose a serious threat to an individual region, including the Northern or Southern flanks of NATO—they can no longer conduct the traditional "theater strategic offensive" against Western Europe. So to size and shape our future conventional forces, we are now focusing on regional threats and the related requirements for forward presence and crisis response. The new strategic element of reconstitution, which includes manpower, technology, and industrial base, provides a hedge against the reemergence of a global Soviet threat.

If I may expand briefly on the key elements of the strategy:

Strategic Deterrence

The deterrence of strategic attack against the United States remains the most critical mission of the Department of Defense. The Soviet Union remains the only nation on earth that can destroy us in a matter of minutes. Despite positive developments in other areas of Soviet security policy, modernization of their strategic forces has continued virtually unabated. This is not an area in which we can afford to take much risk. For those reasons, we must maintain a diverse mix of survivable and capable strategic offensive nuclear forces and command and control assets, and pursue defensive systems to provide global protection against limited ballistic missile strikes whatever their source.

Forward Presence

Forward presence will remain one of the enduring principles of U.S. security policy, although we are planning to reduce the size of our forward deployed forces in Europe and in Asia, as I explained in the East Asia Strategy Initiative I presented to this committee last year. It is one of the key requirements around which we size our forces.

Forward presence may be one of the least appreciated elements of our strategy. In addition to their military role, these forces play a vital but less visible role of maintaining stability, preserving regional balances, and demonstrating U.S. commitment. It is important to ensure that we do not draw down precipitately, undermining the very stability that we have helped to create. Our presence in Asia is already stretched very far and we are reducing very rapidly in Europe. Forward presence, if I may use this analogy, is a little like thin ice—you don't know you've gone too far until you fall through.

Crisis Response

Regional crisis response is another key element in our strategy and force sizing requirements. The importance of being able to respond quickly and decisively to regional crises was underscored by our recent experience in the Persian Gulf. We must maintain the ability to deploy both light and heavy forces of significant size at great distances. Prepositioning, either on land (POMCUS) or afloat (MPS) can greatly expedite and facilitate such deployments, especially for heavy forces.

The potential conflicts we face are many and varied, presenting different challenges in terms of quality of opposition, climate, terrain, distance, infrastructure and host nation support. One element that is likely to be a constant: warning will be short and perhaps ambiguous; therefore our forces must be highly mobile and ready. In early phases, combat forces should come primarily from the Active forces. We also learned from Desert Storm that even regional crises can require a very large military operation on our part, one in which we must be prepared to face chemical, biological, and even nuclear weapons.

Reconstitution

As a result of the changes in the Soviet Union and Eastern Europe, we now expect to have lengthy, strategic warning of any renewed threat of a massive Soviet assault on Western Europe or a global war. These changes in warning have allowed us to plan to reduce our Active and Reserve force structures to meet the forward presence and crisis response requirements I have outlined—while retaining the ability to reconstitute larger forces should the international situation require.

To preserve the capability for timely force reconstitution, we must take care to protect certain long-lead elements of force structure. This includes major weapons systems which take a long time to build or recommission, and the highly skilled personnel whose leadership or technical abilities require many years of training and experience.

Another vital element of a reconstitution strategy is our technological superiority, and a healthy industrial production base. One of the reasons we are willing to accept reductions in force structure is to preserve resources for technological development. Operation Desert Storm demonstrated the value of advanced technology in battlefield effectiveness and in saving lives. As part of our reconstitution capability, we must maintain a robust R&D program to advance our competitive edge in key areas of warfare through innovations in areas like platforms, sensors and subsystems, as well as in the doctrinal and operational innovation necessary to take full advantage of technological progress. Remember that the British invented the tank—but it was the Germans who created the doctrine that made the tank a revolutionary weapon.

The reconstitution strategy allows us to match current forces to the most likely threats, thereby freeing resources to devote to long-term innovation. It accepts a prudent level of risk, while developing the capabilities which may be decisive against future threats.

As Secretary Cheney pointed out, we are well aware that a strategy of reconstitution could require important, risky, political decisions based on early strategic warning indicators. This underscores the need both for improving intelligence and warning support to policymakers, as well as other measures designed to allow a prompt response without unacceptable risk of escalation. The Soviet Union could not pose a theater-wide threat on short notice, even with traditional mobilization, but would have to reconstitute forces. This would bring a year or more of warning, but warning of a different kind and of a more ambiguous nature that may only be indisputable with hindsight. We will have to act on such warning to develop our own capabilities.

Let me emphasize that this strategy is based on certain key assumptions. In particular, the Soviets must complete their withdrawal from Eastern Europe, as promised, and must reduce to CFE-like levels of parity. Beyond this, as the internal order of a state is intimately reflected in its external behavior, our strategy cannot be insensitive to the success of domestic political and economic reform in the Soviet Union. Finally, Western forces must retain sufficient cohesion for defense, even at reduced levels. As the Secretary has emphasized, if trends are less favorable than we have projected, we may not be able to move as fast or as far as we have planned.

Finally, I'd like to describe how these key elements of our new strategy helped to determine the appropriate size and mix of our new conventional force structure.

First, our conventional forces are sized to maintain forward presence in key areas of the world. This includes land-based air and ground forces as well as maritime forces, and it is derived almost exclusively from the Active component. We believe forward presence is a key factor in promoting regional stability as well as providing the "glue" so critical to many of our alliance relationships.

Our forces are sized with an adequate rotation base to support our overseas commitments. This deserves a brief explanation. As critical as forward presence is to our defense strategy, we also recognize the toll that overseas duty takes on our forces. Therefore, we attempt to ensure that the force is sufficiently large that the individual soldier, sailor, airman, or marine is not hit with back-to-back assignments to overseas posts. In other words, we attempt to provide our people with a reasonable amount of time in the States between tours overseas. It is a measure that we see as necessary to retain the quality force we desire.

We also design and size the overall force to maintain our flexibility in responding to one or more regional contingencies. Here we believe the country must be capable of fighting in more than one part of the world, though we no longer believe it is necessary to size the force for global war. Instead, we need the capability to respond to a number of different kinds of contingencies, with the Active forces providing the majority of the combat power and Reserve forces largely supporting the first contingency and providing additional combat power and support for subsequent contingencies.

Last, to hedge against resurgent threats we will reconstitute forces as necessary. In some cases this means creating wholly new forces. In other cases it involves maintaining elements or "seeds" within the overall structure, primarily the reserve structure, that allow for relatively rapid expansion of the force. We also need to maintain a critical mass in key warfare areas. In order to remain the leaders in air-land warfare or anti-submarine warfare or space or any other key warfare area, we need not only the technological lead but skilled operators who know the environment and are constantly innovating tactics and doctrine.

The force sizing criteria outlined here should not be considered additive. Many of the same forces providing forward presence will be relied upon for regional contingencies. Likewise, much of the rotation base for forward presence forces comprises the crisis response element of our strategy. What we have done in sizing the force is ensure our ability to satisfy the requirements of our strategy by maintaining adequate levels of forces forward, sustaining a rotation base to support our forward commitments, providing enough total force (Active and Reserve) to respond to various contingencies, and retaining a reconstitution base against resurgent threats.

In all, we feel the fiscal year 1992-97 defense program takes our conventional force structure down to a level in the mid-1990s that will be the irreducible minimum needed to support the strategic concepts outlined here and to protect our vital interests.

THE NEW STRATEGY IN LIGHT OF DESERT STORM

Let me turn now to an issue that I know is of great interest to the committee: how we view the strategy and its underlying assumptions which as you know were developed last year—in light of our recent experience in Desert Storm.

First, I would say that these events have not so far required us to go back and rewrite the strategy. In fact, I would say that these events have confirmed for us what we believe is the essential correctness of the strategy, vindicating our shift in planning from a global conventional to a regional threat, while underscoring the need—and this principle is embedded in our strategy—to keep a close watch on developments in the world and be prepared to adjust our plans if our major assumptions are not proven correct.

I believe that our success in the Persian Gulf was a clear vindication of central tenets of our new strategy, in particular the need to plan for robust regional threats.

I think it's fair to point out that when we began to refocus our conventional force planning for regional contingencies, there were some who accused us of casting about for new threats to justify our budgets. As one newspaper put it, "Today, facing the prospect of dramatically slashed budget and forces, [the American Armed Forces] are busily floating new 'threat prototypes. . .' "

So it was especially ironic, that the day the President unveiled the new strategy based on those changes in our planning guidance, the day we came over to the Hill to brief the congressional leadership, was August 2.

There is also a lesson from Desert Storm about uncertainty and the difficulty of predicting intentions. Ten years ago, when some of us suggested that Iraqi capabilities to invade the Saudi peninsula were something to worry about, the prevailing view held this "an implausible threat." Yet decisions made then to meet a broader global threat are the basis of the capabilities with which we were able to respond. Even weeks before the Iraqi invasion, when tactical steps could have improved our position, even Arab neighbors failed to appreciate and act on the threat that lay before them. Such is the uncertainty in world affairs.

We were fortunate, in Desert Storm, to be able to build on years of preparation, under Republican and Democratic administrations, and supported by members of this committee, to defend vital U.S. interests in the Gulf, an area of vital U.S. interest dating back to the days of Roosevelt and Truman.

From the 1970s until last winter, our planning for the region focused on the possibility of a Soviet threat. Nevertheless, when Secretary Cheney a year ago directed CENTCOM to plan to defend against a regional threat to the Arabian peninsula—and when that threat materialized even sooner than anyone had expected—the facilities and resources we had developed, the prepositioning, the access agreements, joint planning and exercises, and infrastructure, were there and were of critical importance.

To summarize, our success in the Persian Gulf vindicated our basic assumptions of a reduced Soviet conventional threat, greater regional threats, and increasingly capable allies, and underscored the importance of a balanced approach that matches enduring capability to enduring threats while allowing changes in areas where the threat has changed.

Iraq has demonstrated both the qualitative and quantitative increase in the kind of threat we are likely to face—and the need to maintain highly ready and capable contingency forces to meet similar threats in the future—while underscoring the ability of U.S. forces, technology, and doctrine to counter such threats. Desert Storm has also reaffirmed the importance of enduring pillars of our strategy, such as alliances and forward presence.

I know the committee is interested in the question of whether we could perform a Desert Storm-like operation with the base force we are planning for in 1995. As the Secretary and the Chairman have said on several occasions, the answer is that we could perform a similar operation, but that it would be more difficult and would involve some increased risks elsewhere in the world. We will have the ability to deploy a similarly-sized force 5 years from now, but this would stress our other forward commitments. Further, such a deployment would leave us with minimum active ground forces or tactical air wings in the United States. Therefore, we would have to consider mobilization of additional Reserve forces as an added hedge against risks in other theaters.

Let me emphasize though, that it would be a mistake to focus too much on Desert Storm as the model for future regional contingencies. Many elements—both favorable and unfavorable—were unique to that situation. Having defeated Saddam by fighting the next war while he was fighting the last war, we should not fall into the same trap that he did.

On the one hand, we were fortunate over the past 8 months to enjoy a very permissive environment—a dramatically reduced Soviet threat in Europe that allowed us to move U.S. forces to the Gulf, cooperative allies, extensive infrastructure in place, and a great deal of time to prepare. Some of those factors may be different next time.

On the other hand, there are some fundamental changes brought about by our recent experience that have changed the situation in our favor. Perhaps most important, U.S. resolve to overturn Iraq's aggression will serve as a warning to others around the world who might be tempted to seek territorial expansion on the cheap. More specifically in the Persian Gulf—which is, by virtue of distance and other factors, one of the most demanding regions of the world for our forces to operate—we will no longer face the fourth largest army in the world. In fact, if we do have to repeat Desert Storm, it will be because the world will have made the terrible mistake of allowing Iraq once again to overarm itself. It is to prevent such a threat that we and our allies have insisted on the stringent provisions of the United Nations cease fire resolution.

Furthermore, our friends in the region have learned the risks of waiting too long before requesting our assistance. That factor should lead to security arrangements in the Gulf, including prepositioning and regular exercises and deployments, which will make it possible for us to come back much faster if our help is ever needed again. I hope it also means that if our friends need our help they will ask for it in a more timely way so that our mission will be one of defense rather than ejecting an entrenched force. We are not structuring our force on the assumption that our friends will wait until they are attacked before they call for help in the future. We would still retain the ability to generate the forces necessary for an offensive option if that were necessary, but we could do so only at greater risk.

A larger force provides more flexibility to wait and act later in a crisis, and hedges against risk in less optimistic scenarios. With a smaller force, the risks are higher if we delay beyond the point where defense is possible and have to take offensive action. That is one of the ways in which smaller forces might constrain our freedom of action in the future, and we have to recognize that candidly. There is less margin for the unexpected with a smaller force than we have enjoyed with a force structure to deal with a massive global war.

Perhaps most importantly, we have built in as an essential element of our strategy the ability to respond to future threats as they develop. We will maintain the ability to reconstitute forces in response, for example, to a renewed Soviet threat to Europe, or other threats to U.S. interests in other regions of the globe. We have the capability to rebuild our forces, we will maintain our edge in developing and fielding the most advanced technologies and doctrines, and we will maintain the industrial base needed to respond to strategic warning. Most of all, we must continue to attract and retain the extraordinarily able and dedicated men and women who wear the uniform of the United States and upon whom all of our efforts depend.

As you are aware, under our current plan, defense outlays as a share of GNP are expected to fall to 3.6 percent in fiscal year 1996. That is the lowest level since before World War II. The level of active military manpower will fall to around the 1950 level.

The base force is indeed just that—a level below which we cannot go. I would like to think that events in the Gulf have added a little realism to the heady discussions last year about how fast we could slash the defense budget. I recall one Member of Congress, during the debate over transferring the 401st Tactical Fighter Wing to Italy, suggesting there were "no interesting targets left" for the 401st to hit. This was the same 401st, of course, which carried out critical missions in the Gulf War. I would ask this committee, which I know has been very helpful in our efforts to maintain prudent levels of defense spending, to continue to support us in this regard.

Mr. Chairman, I will let Admiral Jeremiah describe to you the details of our proposed planned force structure. Then we will be happy to take your questions.

Thank you.

Chairman NUNN. Thank you very much.

I will just say for one that I am glad you are over there and have been over there for the past couple of years. It seems to me that your input has been very significant. That has not surprised me, as I have worked with you over the years. I think we really are paying attention to strategy now.

I have to reserve judgment about how much of the excellent work you all are doing on strategy is reflecting itself in the budget. That takes about 6 months of examination. But I am sure that Admiral Jeremiah is going to address that now.

Thank you, Mr. Secretary.

Senator WARNER. Mr. Chairman, I wish to join you in recognition of Mr. Wolfowitz's contribution, not only recently, during the Gulf operation, but through the years.

Sir, I thank you personally for answering the many calls from this Senator to you at various hours during the day and night during Operation Desert Storm. Only once did you fail to take one call, and that was when your wife said, "He is reading to his child right now." At that I said, "Don't interrupt him."

Mr. WOLFOWITZ. Thank you for your forbearance, Senator.

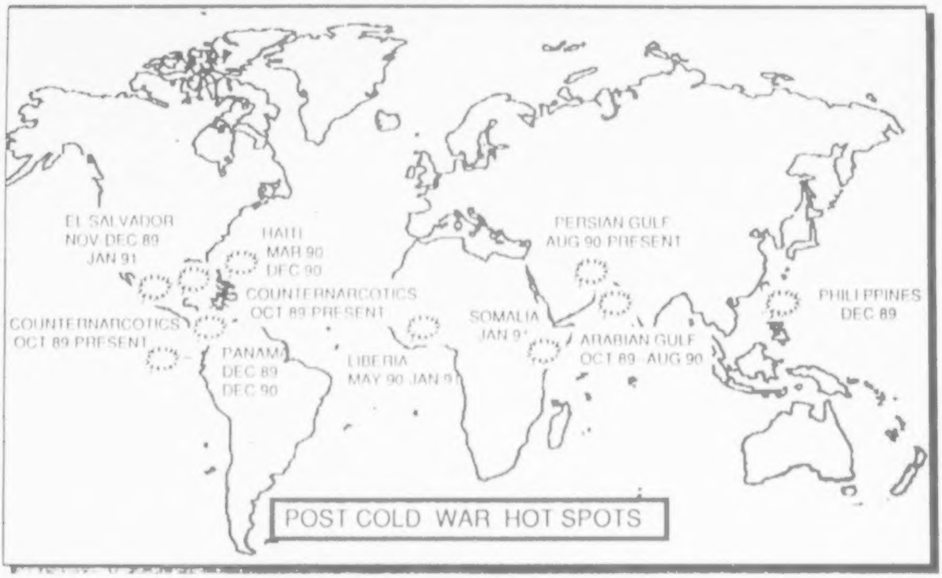
Chairman NUNN. Admiral, we look forward to hearing from you now.

STATEMENT OF ADM. DAVID E. JEREMIAH, USN, VICE CHAIRMAN, JOINT CHIEFS OF STAFF

Admiral JEREMIAH. Mr. Chairman and Senator Warner, I want to thank you for the kind words that you made in your opening remarks with respect to the Secretary's and my participation in Desert Shield. I would like to go on and point out that just as in

Desert Shield and in the strategy formulation, this was a team effort. I think the Secretary would agree with me that it is everyone who contributed, both on the Secretary's staff, on the Joint Staff, the services, and the various theater CINCs. They all participated at one point or another in the development and in the deliberations of the strategy and the subsequent force packages that evolved from that strategy.

So it has been an open and free discussion on our side, with many, many people working very hard to get the work done.


EL SALVADOR
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PERSIAN GULF
AUG 90 PRESENT
ARABIAN GULF
OCT 89 AUG 90
PHILIPPINES
DEC 89
POST COLD WAR HOT SPOTS

Admiral **Jeremiah**. With respect to my statement this afternoon, it will differ somewhat in language from the written statement, but it follows generally quite closely the written statement. In terms of format, the charts that I will use are also made available for you at each of your individual seats in case we didn't get the charts large enough to be readily seen.

Secretary Wolfowitz has recapped the testimony provided in February by Secretary Cheney and General Powell outlining to this committee the major elements of our National Security Strategy. In some cases, I will parallel that in my remarks, just to keep those various pearls strung together on the string.

I would like to add some detail to what General Powell had to say with respect to our force structure plans in the future.

The end of the Cold War is clearly the most dramatic change to have altered the international strategic environment. That change has two important components for us. The first is the changed relationship with the Soviet Union which Secretary Wolfowitz addressed.

In years past, we took it for granted that we would be locked in an adversarial relationship with the Soviets. Quite frankly, we did not have to be very imaginative in our thinking about who the enemy might be. But this has changed.

As Secretary Cheney has pointed out to the committee in February, we have to watch events in the Soviet Union closely to see what impact those events may have on our future force structure.

The second most important component of change caused by the end of the Cold War concerns the altered geopolitical situation in Europe. However the current tensions in the Soviet Union work themselves out, the fact remains that Europe is no longer divided in two camps. Twelve days ago, the Warsaw Pact became an item of history.

Soviet hegemony in Eastern and Central Europe cannot now be revived, even if the reactionaries within the Soviet Union gain the upper hand. We now estimate that the Soviet Union would require 1 to 2 years to mount a traditional strategic offensive in Europe of the type that we have worried about in times past.

Chairman NUNN. Does that translate to 1 or 2 years of warning time, or is that two different things?

Admiral JEREMIAH. I could get into a very theological discussion very quickly on that subject. What I think this translates into is our ability or their ability to begin to marshal the national resources necessary to mount what has to be a long-range, sustainable, offensive operation, as opposed to a lurch across the border in times past.

You cannot do that quite as quickly as you could when you were working along the inter-German border. Also, the force reductions, even though they still have a large residual army, put them in the position of having to reconstitute forces and put them back together. That will give you some strategic warning.

The question that I think everybody has to think about is how fast will we react in the kinds of actions, both executive branch and legislative branch, so that we stay ahead of that warning time and use it to our advantage, however long it is and however we define it.

Senator COHEN. Mr. Chairman, may I just raise a point that has been of some concern to me as I listened to Secretary Wolfowitz's testimony?

In the testimony itself, the Secretary sort of orally brushed past the issue of changes in the Soviet Union.

You talked about changes when you read your testimony. But your written testimony is pretty provocative. In the written testimony, between pages 4, 5, and 6, it talks about the instability and General Moiseyev's statements, and that they cause us great concern. And yet, your oral presentation sort of just went by that rather superficially in terms of why the changes there should cause us great concern.

There seems to be an inconsistency. On the one hand, the Cold War is over. The threat is dramatically reduced. Strategic warning time has increased. And yet, when we look at the written statement, it says that they still cause us great concern.

I wonder if you could maybe reconcile what appears to be a reduction in our concern on the one hand and an increase in our concern on the other?

Am I not reading this correctly, Mr. Secretary, when I look at pages 4, 5, and 6?

Mr. Wolfowitz. Mr. Chairman, should I try a quick answer and let the Admiral continue and then come back?

The quick answer is that we are dealing with a very complex reality. There is a huge reduction in the Soviet threat with the dissolution of the Warsaw Pact, with the retreat of Soviet forces out of Eastern Europe. We do not have to worry about the same kind of short warning invasion of Europe, Western Europe, that we had to in the past. And yet—and this is what we have tried to stress over and over again—with all of that reduction, the Soviet Union remains the largest military power in Europe. And, despite the good developments, it remains a power with, at best, uncertain intentions.

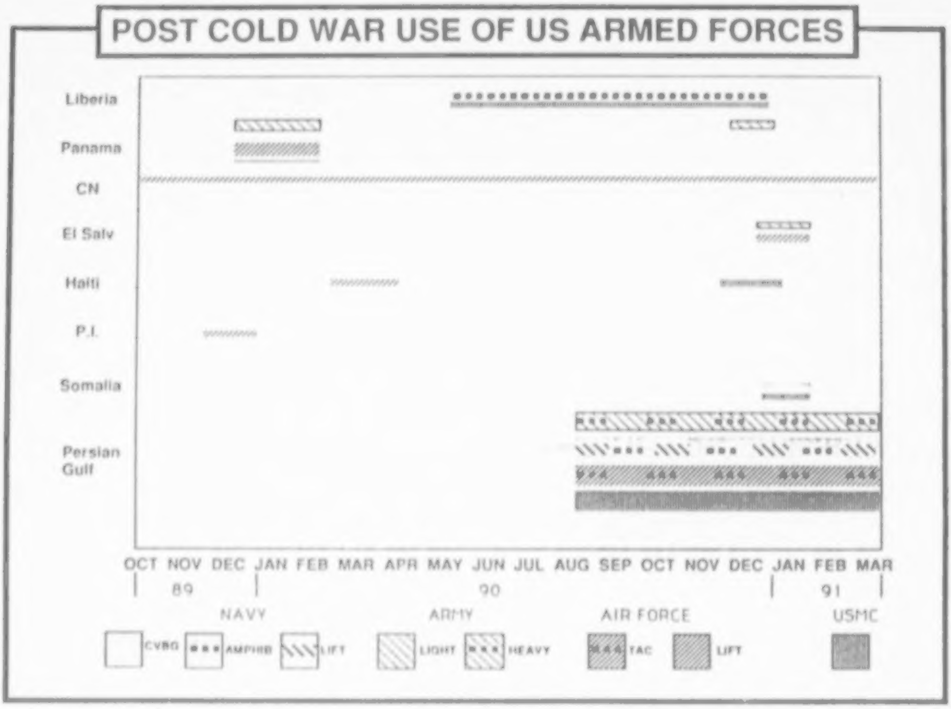
Therefore, when people have said that the Cold War is over and we don't need any forces anymore, our answer is no, that we need a very substantial force, we need the force of a superpower. That is why I come to the conclusion that I do in here, that we really are cutting to the bone, and any lower than that is a very serious danger.

Admiral Jeremiah. And that is not, I think, the only danger in the world. We have found that we have threats that exist to our national interests in other areas, most obviously with Iraq and the invasion of Kuwait.

But I think if you look at the time just since I was nominated to be Vice Chairman last December, we have had a variety of incidents that have required us to use military force. I simply illustrate them on the chart up here.

It shows some of the most recent cases. Most of them do not involve the use of lethal force. But all of them require trained and readily available forces, for everything from Desert Shield and Desert Storm to counter-narcotics operations; from the protection of American citizens in Liberia, which is a long-term event, to the very quick, overnight evacuation of U.S. citizens out of Somalia, at some 450 nautical miles from offshore; and continues today with the operations now underway, the relief operations, for the Kurds in northern Iraq and Turkey.

Even with the end of the Cold War, therefore, the world remains full of dangers, uncertainties, and challenges.



The second chart shows the duration and the simultaneity and the level of effort required. We have been busy.

I think the important thing is that there are some obvious big points in there, like Desert Shield and Desert Storm. But there have been other efforts that have gone on continuously, such as both our U.S. force presence in the Persian Gulf and the counternarcotics operations that have continued to occupy our attention, as you know, from General Joulwan's testimony here most recently before this committee.

That consideration drove much of what is in the current strategic thinking.

Given the rapidly changing world situation and the uncertainties of the future, we developed a strategy to achieve our national security objectives. President Bush specified to us those national objectives which we were required to support. They are the survival of the United States as a free and independent nation; a healthy and growing U.S. economy; a stable and secure world fostering freedom, human rights and democratic institutions; and a healthy, cooperative, and politically vigorous relationship with our friends and allies.

Implicit in a healthy, growing economy is our obligation to operate within the fiscal guidelines that were established by the budget agreement between the Congress and the President.

To achieve those national goals, we developed a strategy that will preserve the security of the Nation through the decade of the 1990s and beyond. That strategy, its rationale and a comprehensive assessment of our planned forces are contained in the 1991 Joint Military Net Assessment recently approved by Secretary Cheney for provision to Congress in accordance with the Defense Authorization Act of 1989.

As explained in the net assessment, the strategy shifts from the earlier focus of containing Soviet aggression to four broader based themes which Secretary Wolfowitz described: deterrence, crisis response, forward presence, and reconstitution.

In many ways, those themes are not new. Many of us have been up here talking about forward presence and crisis response and deterrence for years.

But we are putting emphasis on them on a global basis, looking at regions around the world, as we look at this new strategy.

As we look to the future, those themes broadly define the capabilities we need to insure our national security. Those themes are, in turn, linked to nine fundamental military strategic concepts. Those central military strategic concepts have guided our thinking in the past and will continue to do so in the future.

First is deterrence. We seek to maintain a capable and credible nuclear deterrent. We also need an ability to deter conventional aggression, which influences the size and capability of U.S. forces along with the location and magnitude of our forward deployments and the tempo of our forward operations.

A second concept is power projection.

Desert Shield convincingly demonstrated the military value of power projection. No other nation on earth has that capability today.

The sealift and the airlift programs, which enabled us to project forces, are truly national assets and need to be preserved or modernized at or above our current capability. Key, I think, to getting at a future contingency—and Secretary Wolfowitz alluded to this in his remarks at the end—is the need to commit forces early. If you have small numbers of total forces, you are going to have to get them there, to proceed and carry out the deterrence action very quickly and in large enough numbers so that you will clearly put the opposition in check.

The third concept is forward presence. That includes such things as forces stationed overseas, rotational deployments, access and storage agreements, combined exercises, security and humanitarian assistance, port visits and military to military relationships.

The fourth concept is reconstitution. It begins with an industrial base capable of responding to our defense requirements. It includes well conceived mobilization plans and the ability to regenerate forces ahead of the other guy in the event of crisis.

The fifth concept is collective security.

For more than 40 years, collective security has been central to our military strategic concept. Today, we have a network of alliances and bilateral military relationships that served us well. We need to continue to honor those relationships, even though reductions in forward basing and lower defense budgets may reduce our overseas profile.

The sixth concept is maritime and aerospace superiority. We have maintained this at sea since World War II and in the air since 1953.

Mr. Chairman, control of sea, air, and space lines of communication are essential to our ability to protect our global interests and to project power.

The seventh capability is security assistance. It is a fundamental requirement to nurture the capability of friendly nations to protect their own national security interests, so that we are not brought in to support them.

Eighth is arms control. Arms control has succeeded in limiting the scope of strategic arsenals and has provided a framework for reducing force structure and the level of confrontation in Europe. Not an end in itself, it serves our interests by reducing military threats, increasing the predictability, and stabilizing force modernization.

Our ninth and final central strategic military concept is technological superiority. That superiority is a hallmark of American Armed Forces. The recent conflict in the Middle East reaffirmed how valuable this is to us and how important it can be, not only in insuring victory, but also in reducing friendly and noncombatant losses.

I would hasten to point out to you, however, that it is not the current state of the art. It was technology that was basically introduced into our force structure in the 1970s, in many cases, even at the leading edge.

In addition to these central strategic military concepts two of the specific military tasks required our consideration. First, we have been directed by the President and the Secretary of Defense to assist in the war on drug trafficking. Second, we seek to deter and defend ourselves against international terrorism.

Those central strategic concepts and tasks link our strategy to our force structure. In the past, those concepts have yielded a diverse force with enormous flexibility. In the future, it may well be that that reduced force will limit our flexibility somewhat.

A reduction in overall military flexibility carries with it the possibility of increased risk under certain circumstances.

In consideration of this, we have tried to configure our future forces in a way that minimizes risk and maximizes flexibility within our given constraints.

Mr. Chairman, General Powell explained to the committee the four basic force packages and four supporting capabilities that we need in the future. The force packages and supporting capabilities abide by those enduring strategic concepts and they tie our future military structure that is proposed in the Future Year Defense Program to the new strategy.

The four force packages we need are a Strategic force, an Atlantic force, a Pacific force, and a Contingency force. Those forces are supported by a transportation capability, a robust space capability, a reconstitution capability and a well developed research and development capability.

I would like to point out at this point also, Mr. Chairman, that these four packages and capabilities are intended to do just that, to define requirements for particular types of capability but not necessarily represent command arrangements.

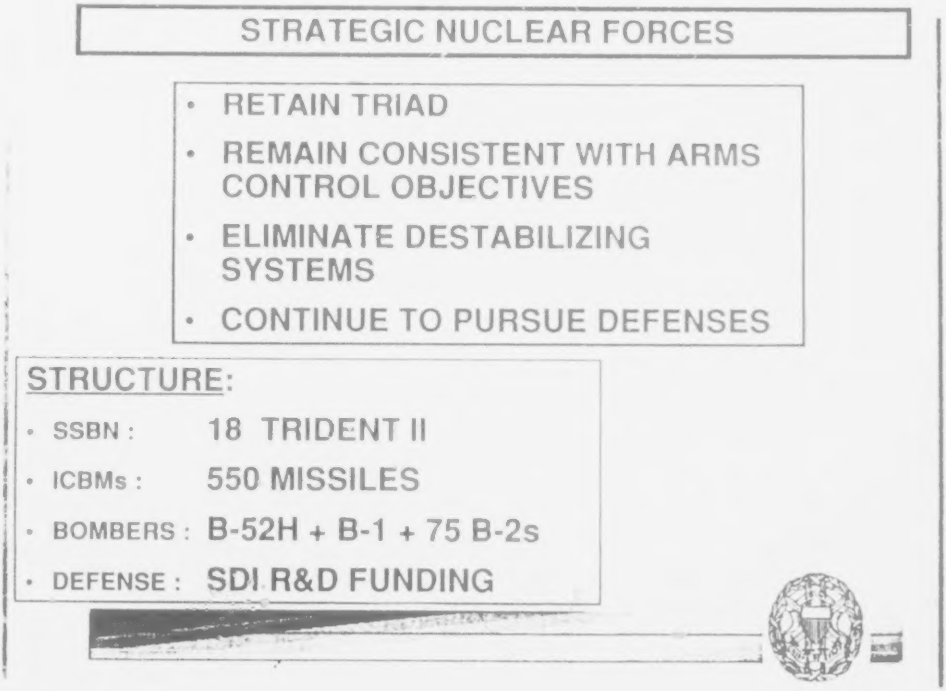
In developing that force structure, we did not base our analysis narrowly. In the past, a common way of deriving force structure was to follow one of three models: a threat based approach; a scenario based approach; or a budget based approach.

During our analysis, we tried to use a broad based assessment to consider the national objectives, looked at our military strategy and our strategic concepts, looked at current and future threats as best we could define them, regional strategies and scenario requirements, and other special considerations, such as the fiscal constraints and political realities.

At the same time, we took care to protect unique capabilities, such as special operations, combat rescue and amphibious forces, as well as missions such as counter-drugs and disaster relief.

Last summer's program review and the fall budget review insure that forces enhanced the strategy and that the investment programs supported those forces. In some cases the programs that we felt were required for our strategy could not be sustained because of our management and acquisition problems, the A-12 being a case in point, where that capability is required. But the procurement process, the acquisition process, was not satisfactory.

Let me talk briefly to each of those force packages as we projected them during the budget development, and please recognize that those are planning configurations. I think that the potential exists for us to mix among theaters, to change as we have worked this down through the system, and look at what will inevitably be changing regional requirements.



STRATEGIC NUCLEAR FORCES

- RETAIN TRIAD
- REMAIN CONSISTENT WITH ARMS CONTROL OBJECTIVES
- ELIMINATE DESTABILIZING SYSTEMS
- CONTINUE TO PURSUE DEFENSES

STRUCTURE:

- SSBN : 18 TRIDENT II
- ICBMs : 550 MISSILES
- BOMBERS : B-52H + B-1 + 75 B-2s
- DEFENSE : SDI R&D FUNDING

The first package is our strategic nuclear forces.

I said earlier that the end of the Cold War transformed our relations with the Soviets and, despite those positive developments, we need to remember that the Soviet Union is still the only country with the capability to destroy the United States. This will not change in the near future.

Even with the most optimistic strategic arms reduction treaty, the Soviets are not likely to give up their strategic nuclear capability, because military power, and particularly strategic power, is virtually their only remaining claim to super power status.

Our strategic deterrent force must, therefore, remain viable.

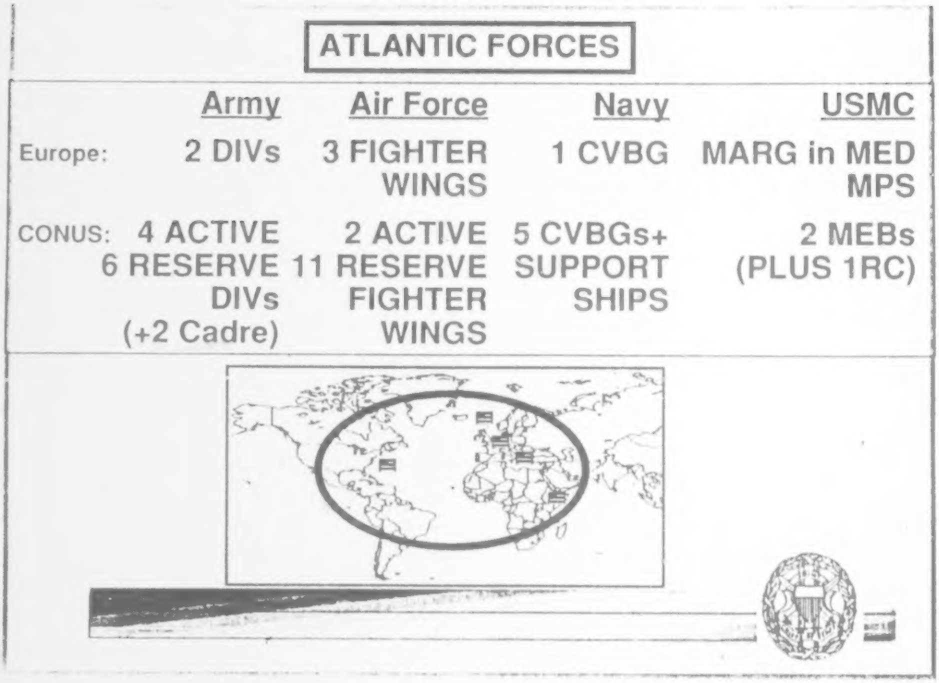
Our downstream planned strategic offensive force retains the triad of submarines, ground-based missiles, and manned bombers. As shown by the chart, our submarine force will ultimately consist of 18 Trident II SSBNs armed with a mix of C-4 and D-5 missiles. We project having a total of 181 strategic bombers by 1995. We'll augment our B-1s with sufficient B-52s to insure a credible bomber force during the introduction of the B-2.

The greatest potential for change lies in the structure of our land-based missile forces. We plan to reduce our ICBM's over that time by retiring the Minuteman II. To protect our future options, however, we will continue research and development on both the Peacekeeper rail garrison and a Small ICBM, but defer their deployment.

We also will remain committed to the development of strategic defensive forces. Just as we need the ability to deter an attack on the United States, we should also have the ability to defend our Nation against such an attack if deterrence fails.

Given the global cottage industry in Third World missile technology and weapons of mass destruction, we need to work toward defenses against limited strikes and in-theater ballistic missile defenses.

I doubt that very many of us will forget the images of the Saudis and the Israelis scrambling for gas masks as Iraqi SCUD missiles flew toward them. I think we can be assured that the next threat along those lines will be more sophisticated than SCUD.



ATLANTIC FORCES

	Army	Air Force	Navy	USMC
Europe:	2 DIVs	3 FIGHTER WINGS	1 CVBG	MARG in MED MPS
CONUS:	4 ACTIVE 6 RESERVE DIVs (+2 Cadre)	2 ACTIVE 11 RESERVE FIGHTER WINGS	5 CVBGs+ SUPPORT SHIPS	2 MEBs (PLUS 1RC)

Our second force package is our Atlantic forces. Those forces, which include elements from all services, span the area presently covered by the Atlantic Command, the European Command, and the Central Command. I should point out that the precise configuration of our forward based forces in Europe is still being negotiated with our European allies.

The Active and Reserve Army divisions committed to this force are primarily heavy divisions. The terrain lends itself to those kinds of operations in all of those theaters.

We foresee a heavy corps of two divisions plus supporting elements that remain in Europe, in addition to some POMCUS assets. As you can see, much of the Army's Reserve forces will be configured for deployment in that region. That makes it absolutely necessary that we have adequate sea and air assets for lift to assure the timely movement of those forces in the event of crisis, and also to insure that we can keep those forces supplied.

I will return to our strategic mobility requirements in a minute.

The Air Force will keep something like three fighter wings based in Europe, backed up by both Active and Reserve wings as shown. We support two to three carrier battle groups to maintain a forward presence throughout that area, including the Mediterranean and the Red Sea and the Persian Gulf.

We will maintain a permanent rotational marine amphibious ready group in the Mediterranean, and in the wake of the events that have taken place in the Persian Gulf, we will retain a presence in the Middle East in the near-term to insure stability as all that is winding down, and to provide for the orderly, agreed deployment of our equipment and munitions and to assist in the restoration of Kuwait's infrastructure.

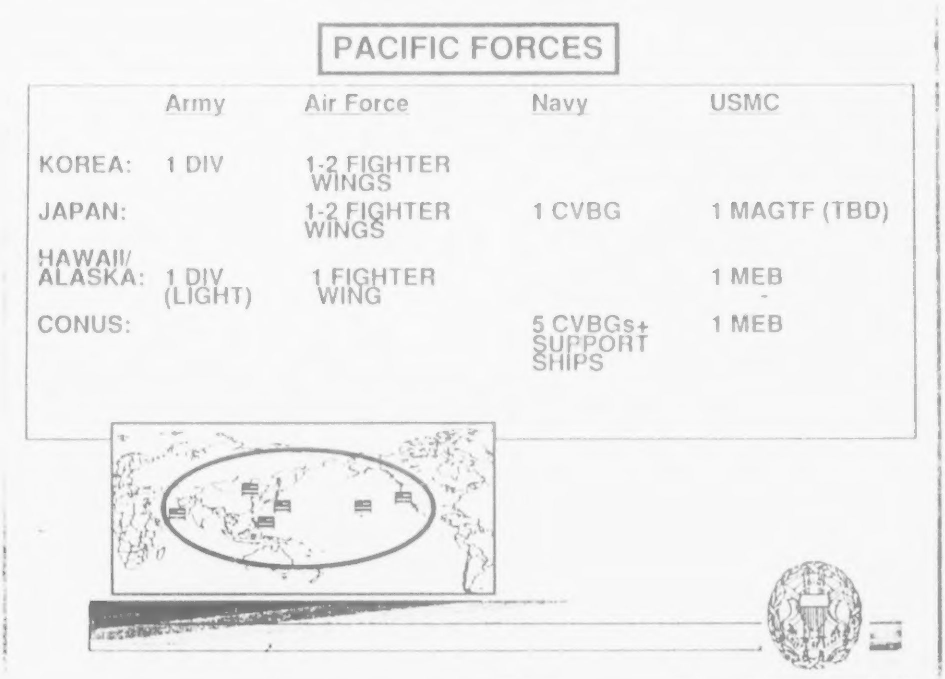
In the longer-term, we expect to maintain a continuous naval presence in the Gulf area, and we would expect to exercise our ground and air force assets there regularly. We are working with the CINCs and our friends in the Gulf now to determine precisely what the details of that presence will be.

The Pacific is a region of growing importance to the United States and the nations of the Pacific Rim have a dynamic economy. We have economic, political, and military ties to that region, which are increasingly vital to the United States.

Today, our two-way trade with the Pacific Rim is greater than our trade with Europe. Since World War II, the United States has fought two wars in the Far East against regional trouble-makers. And now that Iraq has recently dropped off the list of large armies, the world's seven largest armies operate in the Pacific and South Asia region.

Nearly every nation in that region holds some kind of geopolitical, ethnic, religious, or political complaint against one or more of its neighbors.

Those Pacific forces that we have in place deter aggressors to the region and demonstrate our commitment to our allies. Their presence there is beneficial to the entire region and not just to our military allies. That presence has guaranteed a stable security environment in the Pacific, which has allowed the economic and commercial development to flourish.



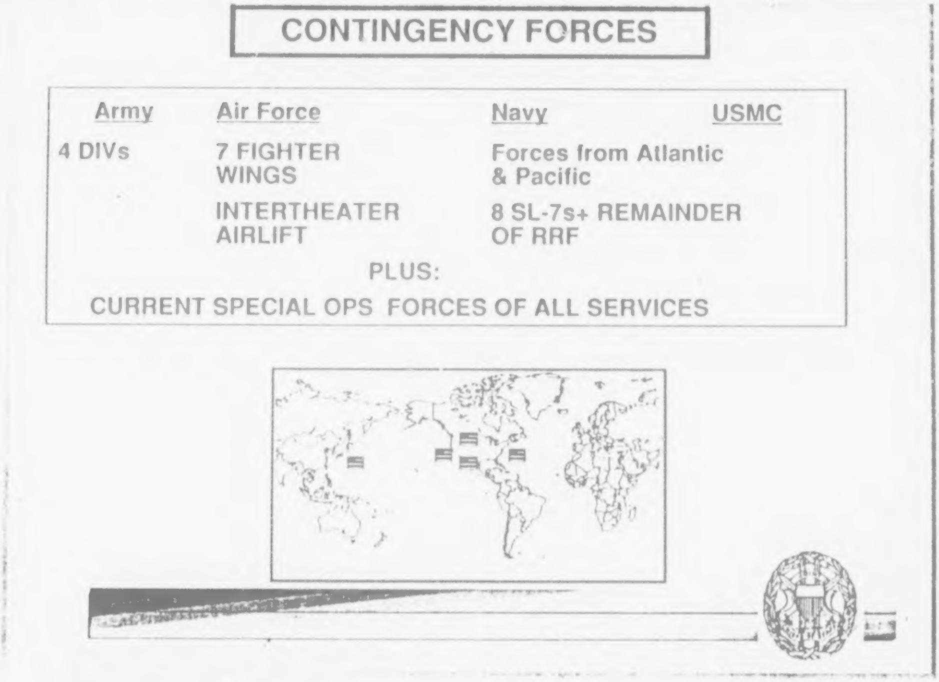
PACIFIC FORCES

	Army	Air Force	Navy	USMC
KOREA:	1 DIV	1-2 FIGHTER WINGS		
JAPAN:		1-2 FIGHTER WINGS	1 CVBG	1 MAGTF (TBD)
HAWAII/ ALASKA:	1 DIV (LIGHT)	1 FIGHTER WING		1 MEB
CONUS:			5 CVBGs+ SUPPORT SHIPS	1 MEB

Our Pacific forces also remind everyone that the United States itself is a Pacific power and that we remain interested in the destiny of that region.

The chart reflects the fact that the Pacific is primarily a maritime theater. Six carrier battle groups, half of our projected carrier force, will operate in the region, as will three Marine Expeditionary Brigades. The Army forces in the area will be trimmed to two divisions. After consultation with our allies, the Air Force will deploy fighter wings in the region, as shown.

Finally, we have provided Contingency forces for dealing with the kinds of local crises that are limited in time, space, and scope.



CONTINGENCY FORCES

Army	Air Force	Navy	USMC
4 DIVs	7 FIGHTER WINGS	Forces from Atlantic & Pacific	
	INTERTHEATER AIRLIFT	8 SL-7s+ REMAINDER OF RRF	

PLUS:

CURRENT SPECIAL OPS FORCES OF ALL SERVICES

For those contingencies, we need light, hard-hitting, and deployable forces that are kept in a high state of readiness. Depending on the circumstances, you would expect the forward deployed forces in the Atlantic and the Pacific, like the carriers and the Marine air-to-ground battle forces, to be the primary response to a contingency. But they would be augmented for slightly larger events by forces built around the 18th Airborne Corps, comprising four divisions of heavy, airborne, air assault and light infantry troops.

The Navy and Air Forces will configure their necessary additional expeditionary supporting forces.

Each of the services has the capability to provide special operating forces to work with the contingency forces, including the Special Operations capable elements that flow from each Marine Expeditionary Unit.

Mr. Chairman, in addition to these force packages, General Powell also outlined four supporting capabilities that we need in the future. Let me touch on each of those briefly.

First is our transportation capability. Strategic mobility is crucial to the success of each of our force packages. The Atlantic force needs air and sealift to deploy and reinforce elements in trouble spots away from our forward bases in Europe and to keep those forces supplied. A similar requirement exists in the Pacific, which spans more than half the globe.

Our ground Contingency forces are based in the United States and need a rapid deployment transportation system to move into crisis areas. We need the C-17 to replace the capability lost as the C-141 retires, and for sealift we have to have increases, a modest increase, at least, in the size of the Ready Reserve Fleet, to the point where we can deploy a heavy Army Corps in a single sailing, and then sustain that corps, plus the Marine and Air Forces that are associated with it in our most stressful contingency scenarios. We need to deploy three squadrons of marine maritime prepositioned ships, which gives us the rough equivalent of a marine division's worth of equipment uploaded, and we want to configure those black bottoms, if you will, so that the elements within that force can be task organized and employed in smaller components.

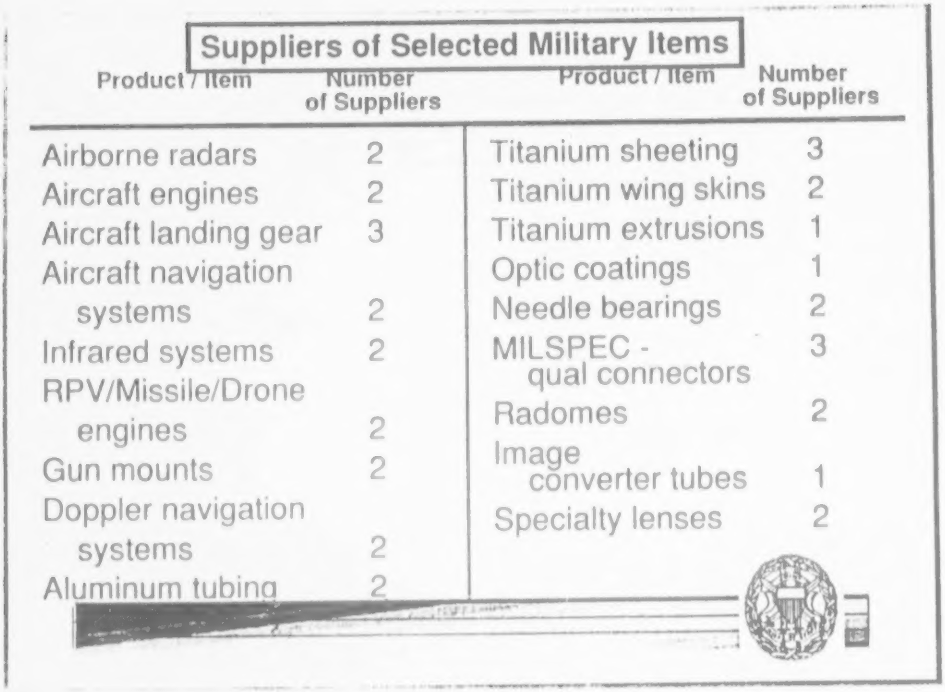
We also need prepositioning and standby installations in both Europe and Southwest Asia.

Space is the second essential supporting capability. We learn every day how dependent we are upon space for communications, intelligence, and navigational activity, which have now become virtually essential to the success of nearly every U.S. military operation. That capability will become even more important in the future, as we move away from and reshape our overseas base structure and our access agreements.

Our program for space forces will modernize the current systems, increasing the capacity of our space support platforms and support commanders and forces in the field.

Reconstitution has been addressed earlier. It consists of three elements: industrial production, mobilization planning, and force regeneration. Based on my experience in the last year and deliberations with the Defense Acquisition Board and the Joint Requirements Oversight Council, the element of greatest concern to me, sir, is our industrial capacity. If we are to produce the weapons and systems that we need in the future, we will need a robust research and development capability, and I will talk about that a little bit more in a minute.

We also need the capability to take what R&D gives us and turn it into usable production.



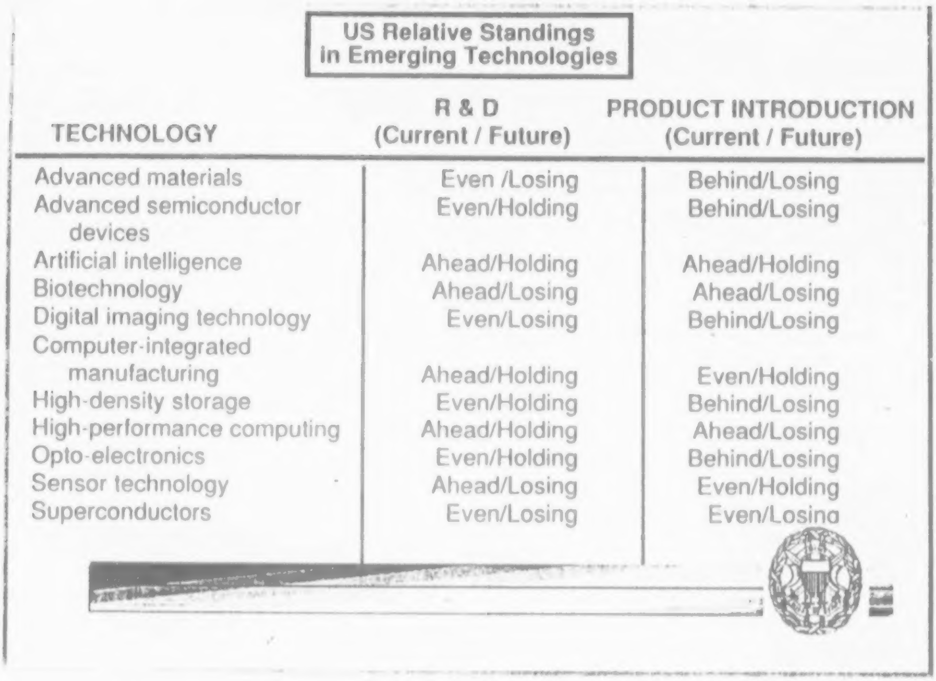
Suppliers of Selected Military Items

Product / Item	Number of Suppliers	Product / Item	Number of Suppliers
Airborne radars	2	Titanium sheeting	3
Aircraft engines	2	Titanium wing skins	2
Aircraft landing gear	3	Titanium extrusions	1
Aircraft navigation systems	2	Optic coatings	1
Infrared systems	2	Needle bearings	2
RPV/Missile/Drone engines	2	MILSPEC - qual connectors	3
Gun mounts	2	Radomes	2
Doppler navigation systems	2	Image converter tubes	1
Aluminum tubing	2	Specialty lenses	2

Here is where I see us facing a severe challenge in the coming years. In order to get production, you need producers. As the chart shows, the number of subtier suppliers of many military items critical to our major weapon systems is dwindling drastically. I think that in the experience of planning the defense budgets over the coming years, that problem will grow worse.

With further attrition not only among subtier suppliers but also among major defense contractors, particularly in ship building, nuclear power, and combat vehicles, we may have found those industries have shrunk to an unacceptably low level. Across the board, we can expect the competitive pressures for an economically oriented and unified Europe and the dynamic nations of the Pacific Rim will take their toll as well.

In a slightly different area right now, we urgently need to get on with strategic materiel production in facilities like Rocky Flats and Savannah River, while we look toward the long-term reconfiguration of the Department of Energy facilities supporting the Department of Defense, both in our strategic and tactical systems.



US Relative Standings in Emerging Technologies

TECHNOLOGY	R & D (Current / Future)	PRODUCT INTRODUCTION (Current / Future)
Advanced materials	Even /Losing	Behind/Losing
Advanced semiconductor devices	Even/Holding	Behind/Losing
Artificial intelligence	Ahead/Holding	Ahead/Holding
Biotechnology	Ahead/Losing	Ahead/Losing
Digital imaging technology	Even/Losing	Behind/Losing
Computer-integrated manufacturing	Ahead/Holding	Even/Holding
High-density storage	Even/Holding	Behind/Losing
High-performance computing	Ahead/Holding	Ahead/Losing
Opto-electronics	Even/Holding	Behind/Losing
Sensor technology	Ahead/Losing	Even/Holding
Superconductors	Even/Losing	Even/Losing

I think the final supporting capability we need is a healthy research and development base. Product improvement modernization and innovation all flow from that R&D. The recent war in the Persian Gulf demonstrated how investment in high technology paid enormous dividends in the furnace of battle. But we are not doing as well as we should here.

We have come to take American technological superiority for granted. That, clearly, is not the case today.

As this chart shows, our lead in many critical future-looking technologies is already eroding. So we cannot take R&D for granted, and we should not overlook the positive commercial spin-offs that often accompany our investment in defense technologies.

Private sector investment in science and technology has quadrupled in this country since 1960. But that investment has still not offset the decline in DOD funding. In total, our investment in national R&D continues to steadily decline.

As a nation, we have not been able to protect the technological lead we once held in so many fields, with harmful consequences to our commercial economy as well as to our future defense requirements.

Operation Desert Shield—and Secretary Wolfowitz addressed this——

Senator WARNER. Admiral, at some point, maybe in the questions, are you going to give some solutions to how we protect this industrial base? You have stated the problem only so far.

Admiral JEREMIAH. Stating the problem is easy. Giving you the answer is hard.

Senator WARNER. Very well. At least I have put the challenge to you. So think about it because I will put it to you later.

Admiral **Jeremiah**. It is the same kind of problem that we have had in the Merchant Marine industry for decades. It takes some change in commitment nationally for us to work the problem.

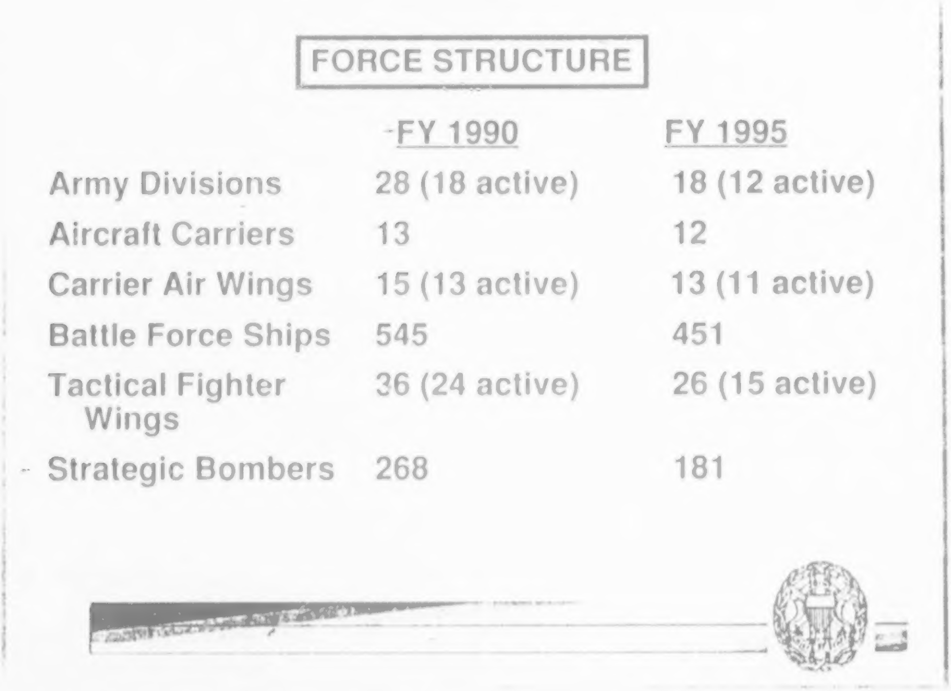
Chairman **Nunn**. We have the same problem in the commercial sector. But that does not relate to the same declining defense budget. It relates a whole lot more to human and a number of other factors.

Admiral **Jeremiah**. But they play back and forth in the equation.

Chairman **Nunn**. They certainly do.

Admiral **Jeremiah**. I think I have one solution to part of the problem, but it is a very small part of the problem.

With respect to Desert Shield, I think it confirms all the things that the Secretary has talked to. Prepositioning was important. A robust rapid deployment was important. The coalition was important and served us well. It took a while to bring everybody along, but we have the command and control relationships and the cooperation of nations and capability of the forces tied in over a period of time that we have the opportunity to use.



FORCE STRUCTURE

	FY 1990	FY 1995
Army Divisions	28 (18 active)	18 (12 active)
Aircraft Carriers	13	12
Carrier Air Wings	15 (13 active)	13 (11 active)
Battle Force Ships	545	451
Tactical Fighter Wings	36 (24 active)	26 (15 active)
Strategic Bombers	268	181

I think it probably confirmed what you already know, and that is that the Armed Forces we have today are the finest, most ready forces we have ever had in peacetime. If our future forces are smaller, they will have to have that same quality in order to succeed in a Desert Storm type of contingency.

The flexibility, the risks and the response time will all impact on our ability to replicate the Desert Storm scenario in 1995 and beyond. But key to our ability to do that sort of thing anywhere in the world is our ability to retain essential bases and access rights around the world. In turn of the century terms, it is the access to coaling stations necessary to give us the flexibility to deploy forces globally.

In conclusion, Mr. Chairman, our proposed force packages and supporting forces have been structured in full consideration of our strategy and our assessment of future events. In that regard, the reduced force levels we are proposing will be reached in an orderly manner, leaving us the flexibility to re-evaluate our decisions and fine tune the force which may be required by changing events.

This chart summarizes where we are and where we are going.

We have programmed for smaller forces based upon reduced requirements and a corresponding reduction in defense resources. We have to be careful, however, that those force reductions do not gain their own momentum independent of either world events or our national strategy.

Thank you, Mr. Chairman.

[The prepared statement of Admiral Jeremiah follows:]

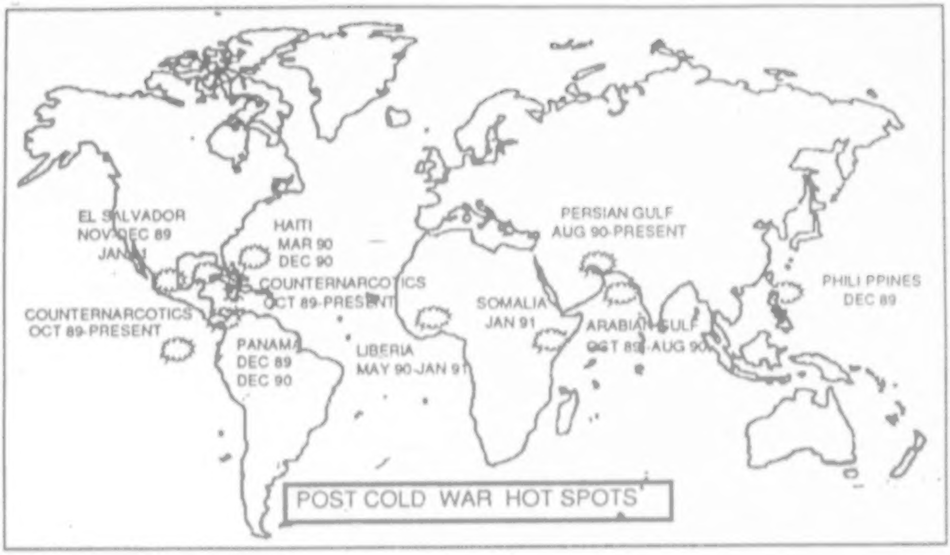
PREPARED STATEMENT BY ADM. DAVID E. JEREMIAH, VICE CHAIRMAN OF THE JOINT CHIEFS OF STAFF

Mr. Chairman, in February, Secretary Cheney and General Powell spoke to this committee and outlined for you the major elements of our national security strategy. Secretary Cheney gave an overview of some of the strategic assumptions that underlie our planning. General Powell sketched out emerging and enduring strategic realities at home and abroad, and also explained the force packages and supporting capabilities we need to meet our future defense needs. It is my intent today to provide some detail to what General Powell said regarding our force structure plans.

The end of the Cold War is clearly the most dramatic change to have altered the international strategic environment. The change has two important components for us. The first is our changed relationship with the Soviet Union. In years past, we took it for granted that we were locked in an adversarial relationship with the Soviets, and planned our national security programs accordingly. This is now changed. Secretary Cheney pointed out, however, the concerns we have over recent events in the Soviet Union that seem to be contrary to their earlier moves toward democratization and demilitarization.

The second important component of change caused by the end of the Cold War concerns the altered geopolitical situation in Europe. However the current tensions within the U.S.S.R. work themselves out, the fact remains that Europe is no longer divided into two camps separated by an Iron Curtain. The Warsaw Pact is a thing of the past, and Soviet hegemony in Eastern and Central Europe cannot be revived even if reactionaries within the Soviet Union gain the upper hand. Our estimates now are that the Soviet Union would require 1 to 2 years to mount a traditional strategic offensive in Europe of the type we were prepared to oppose on short notice in the past. These changes have caused us to shift our strategic focus.

But the end of the Cold War has not brought with it a wholesale end to international conflicts, or even to threats to our national interests. The war in the Middle East to liberate Kuwait is only the most obvious example of this. We have had several other occasions within the past 18 months in which we have used our military forces to fulfill both combat and noncombat missions. Even with the end of the Cold War, the world remains full of dangers, uncertainties and potential challenges to our interests.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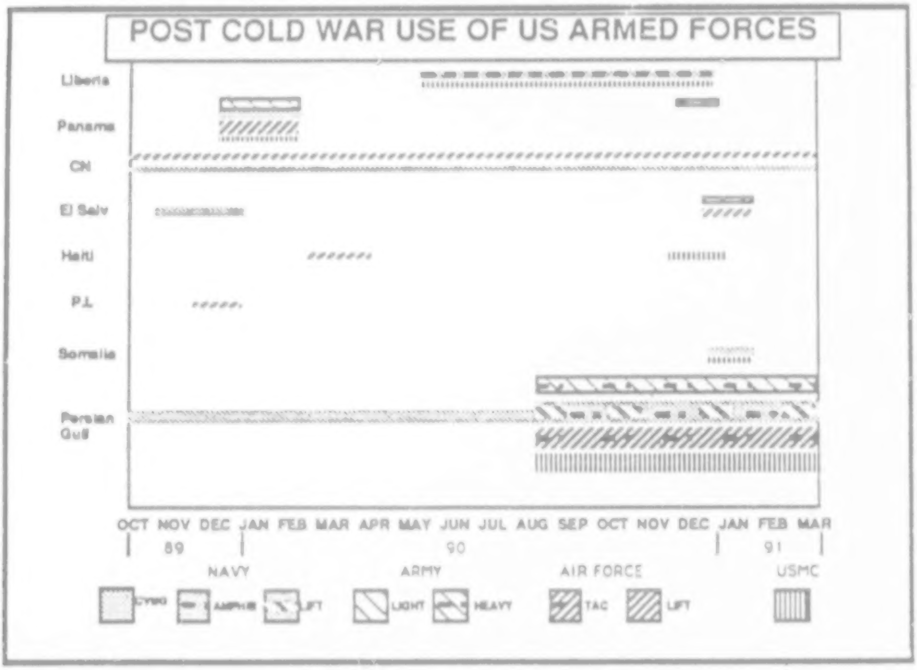


KEY ELEMENTS OF U.S. STRATEGY

Given the rapidly changing world situation and the uncertainties of the future, the Department of Defense has developed a strategy to achieve our national security objectives. President Bush has specified those objectives as national survival; a healthy economy; a stable and secure world; and healthy, cooperative and politically vigorous relations with our allies and friendly nations. Implicit in a healthy, growing economy is an obligation for us to operate within the fiscal guidelines of the budget agreement between Congress and the President.

That strategy, and a comprehensive assessment of our planned forces, are contained in the 1991 Joint Military Net Assessment recently approved by the Secretary of Defense for provision to Congress in accordance with the National Defense Authorization Act of 1989. Quoting from the JMNA: "U.S. military strategy is founded on the premise that America will continue to serve a unique leadership responsibility for preserving global peace and stability. It is derived from U.S. defense strategy, which formerly focused primarily on containing Soviet aggression on a global scale. This defense strategy is now shifting to added focus on forward presence, crisis response, and reconstitution as its major themes, while maintaining our long-term reliance on nuclear deterrence. Because of changes in defense strategy, priorities and emphasis among the various principles that describe the national military strategy have begun to shift significantly. This shift represents an essential adaptation to the new realities already described—a receding Soviet threat and a declining defense budget."

CENTRAL MILITARY STRATEGIC CONCEPTS

The Department has linked these elements of defense strategy to our forces through fundamental military strategic concepts which have guided this Nation since the beginning of the nuclear age and which, in testimony to their resilience, remain valid today:

Deterrence. The requirements of robust and stable nuclear deterrence will continue to define the composition of our strategic offensive forces. Likewise, global capability to deter conventional aggression influences the size and characteristics of U.S. forces, the location and magnitude of forward deployments, and the tempo of forward presence. The false economy of withdrawal from regional responsibility belongs to an earlier age. Isolation is a costly error.

Power Projection. The Desert Shield mobilization convincingly demonstrated the military value of power projection capability. No other nation on earth possesses this capability. The sealift and airlift mobility programs, which enable projection of land and air forces, are truly national assets that must be preserved and modernized at or above current levels of capability.

Forward Presence. American forces contributed to the winning of the Cold War in part by remaining engaged in Europe for over 40 years, making clear to potential adversaries the extent of American interests. We stayed in Europe even when economic times were lean at home and when we were engaged in a major conflict in Southeast Asia. Forward presence can include, but is not limited to, stationed forces, rotational deployments, access and storage agreements, combined exercises, security and humanitarian assistance, port visits, and military-to-military relations. Now that the immediate military threat to Western Europe is fading, the time has come to refocus the emphasis of our forward presence. However, certain forward basing, force deployments, and materiel prepositioning must also be done to support power projection.

Reconstitution. This concept signals that the Nation is prepared to field additional forces if required to protect our vital interests against a future, expanded threat. Reconstitution capability begins with an industrial base that is capable of responding to increased demand for munitions, weapon systems, and supporting materiel to provide sustainment for major combat operations. It also includes detailed and accurate plans for gradual mobilization of national assets in response to strategic warning. Finally, it includes the ability to regenerate forces through activation of cadre units and to create additional new units.

Collective Security. Collective security is the concept that acknowledges our enduring commitment to those alliances and bilateral relationships that have served this Nation so well in the past. Reductions in forward presence and lower defense budgets will increase our reliance on collective security arrangements.

Maritime and Aerospace Superiority. Control of sea, air, and space lines of communication is essential to our capability to protect our global interests and to project power, reinforce and resupply forces, and gain access. Maritime and aerospace superiority stem from the synergism of a variety of factors, including advanced technology, a robust force structure, and high states of readiness.

Security Assistance. When we nurture the capability of other nations to protect their own national security interests, we are effectively lessening the potential for greater burdens on our own forces and furthering the cause of regional security cooperation. Thus, security assistance continues to receive emphasis even as our own force structure declines.

Arms Control. Arms control has succeeded in limiting the scope of strategic arsenals, removing an entire class of weapons from the battlefield, and providing a framework for reduction in the level of confrontation in Europe. Not an end in itself, arms control serves our interests by reducing military threats, increasing the predictability of military relationships, and increasing the stability of force modernization.

Technological Superiority. Technological superiority is a hallmark of American forces. We cannot surrender the technological leadership that has consistently put the best weapon systems in the field and backed them up with supporting systems to match. We have used the term "force multiplier" so often that it has lost its impact in conversation; fortunately, it has not lost its impact in conflict.

OTHER MILITARY TASKS

In addition to these central strategic military concepts, two other specified military tasks required our consideration. First, we have been directed by the President and the Secretary of Defense to assist in the war on international drug trafficking. Second, we seek to deter and defend ourselves against international terrorism. Both of these tasks require appropriate forces and resources, and neither can be neglected as we consider the future structuring of our forces.

FLEXIBILITY AND RISK

These central strategic concepts and tasks provide the link between our strategy and our force structure. In the past, adherence to these broad concepts have yielded a diverse force with enormous flexibility. In the future, it may well be that a reduced force structure will limit our flexibility somewhat. A reduction in overall military flexibility carries with it the possibility of increased risk under certain circumstances. In consideration of this, we have tried to configure our future forces in a way that minimizes risk and maximizes flexibility within our given constraints.

MILITARY FORCE PACKAGES

The four force packages and four supporting capabilities discussed below apply the new strategy concepts to our military force structure. This is the structure we have proposed in the Future Years Defense Program.

STRATEGIC FORCES

Our planned strategic offensive force retains the triad of submarines, ground-based ballistic missiles and manned bombers in recognition of the strengths of each leg and their value to our overall nuclear strategy. Our planned strategic force structure anticipates continued progress in arms control while ensuring necessary force modernization. The 18 remaining SSBNs in the force are all Trident-class submarines equipped with a mix of C-4 and D-5 missiles. At a total of 181 by 1995, the bomber leg reflects the contributions of the B-1 fleet, and retention of sufficient B-52s to ensure a credible bomber force during introduction of the B-2.

STRATEGIC NUCLEAR FORCES

- RETAIN TRIAD
- REMAIN CONSISTENT WITH ARMS CONTROL OBJECTIVES
- ELIMINATE DESTABILIZING SYSTEMS
- CONTINUE TO PURSUE DEFENSES

STRUCTURE

- SSBN : 18 TRIDENT II
- ICBMs : 550 MISSILES
- BOMBERS : B-52H + B-1 + 75 B-2s
- DEFENSE : SDI R&D FUNDING

The greatest potential for change lies in the structure of our land-based missile forces. Arms control may yet succeed in removing destabilizing silo-based missiles with multiple warheads. If so, this will promote single-warhead missiles in silos or missiles in mobile basing modes. To protect our future options, we have chosen to continue research and development in both the rail garrison deployment mode of the Peacekeeper missile and the Small ICBM while deferring deployment of either. At the same time, we plan to reduce our ICBM force by retiring Minuteman II in expectation of mutual and effective verifiable force reductions.

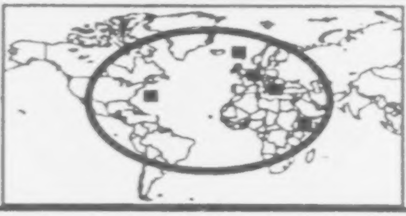
We also remain committed to the development of strategic defensive forces. We need to have the ability to deter an attack on the United States and to defend against an attack if deterrence fails. The SDI program, although restructured, remains consistent with the Phase I objectives established by the Joint Chiefs. Given the proliferation of missile technology and the possible proliferation of unconventional warheads in future years, investments in defenses against limited strikes and in-theater ballistic missile defenses are complementary and prudent.

ATLANTIC FORCES

Atlantic forces form the backbone of conventional deterrence from the eastern shores of the United States through the Persian Gulf. These are the forces that maintain our peacetime engagement in Europe, the Middle East, the Mediterranean, and Southwest Asia. They will also be the bedrock of our reconstitution capability should we receive warning of a Soviet return to a posture of direct military confrontation with the West. Although we are reviewing our forward presence in the Atlantic region with our allies and, hence, no final decision has been made, I expect the Active component of the Atlantic forces will eventually include a forward presence in Europe of a heavy Army corps with at least two divisions; a full-time Navy and Marine presence in the Mediterranean; and Air Force fighter wings possessing the full spectrum of tactical capability. We are in the process of working with our NATO partners to refine the composition, location, and future command relationships of these forces. As we shift from an atmosphere of tension and confrontation to one of prudent watchfulness and engagement, multinational formations may well become the command arrangement of choice.

ATLANTIC FORCES

	Army	Air Force	Navy	USMC
Europe:	2 DIVs	3 FIGHTER WINGS	1 CVBG	MARG in MED MPS
CONUS:	4 ACTIVE 6 RESERVE DIVs (+2 Cadre)	2 ACTIVE 11 RESERVE FIGHTER WINGS	5 CVBGs+ SUPPORT SHIPS	2 MEBs (PLUS 1RC)



In the wake of the recent conflict in Kuwait and Iraq, we may retain a modest future presence in the Middle East in the near term to ensure stability in the region, to provide for the orderly redeployment of our equipment and munitions, and to assist the restoration of Kuwait's infrastructure. In the longer term, we will keep a continuous naval presence in the Gulf, and we expect to exercise ground and air forces there regularly. We are currently working with the CINC and our friends in the Gulf to define the details of that presence.

The forward-deployed elements of Atlantic forces, and their Active component reinforcements in CONUS, also provide a potent crisis response capability to protect American interests and project force in the region. While the number of full-time forward deployments will decline, Atlantic forces will maintain access and influence throughout the region by means of port visits, joint and combined exercises, and periodic short-term redeployments of selected units.

The bulk of the Reserve components of the services have been allocated to Atlantic forces. This reflects their essential role in demonstrating America's continuing commitment to the security of the region. However, we will continue to call upon our Reserves to perform combat and combat support missions in crisis response and contingency operations in other areas as needed. While the degree of readiness may vary among specific units, we remain fully committed to the Total Force concept, as reflected by our intention to continue the modernization of Reserve forces.

When viewed in total, our Atlantic forces are structured to protect American political and economic interests in the region from our eastern shore to the Persian Gulf.

PACIFIC FORCES

The Pacific is a region of growing importance to the United States. Several nations of Northeast Asia and the Pacific Rim have dynamic economies, and our commercial, political and military ties to this region are vital to us. Since World War II, the United States has fought two wars—Korea and Vietnam—in the Far East against regional troublemakers. We cannot ignore the fact that today the seven largest armies in the world operate in this region. Furthermore, nearly every nation in the region holds some kind of geographical, ethnic, religious or political complaint against one or more of its neighbors. Our Pacific forces continue to deter would-be aggressors in the region, and demonstrate our commitment to our allies. But our presence there is beneficial to the entire region and not just to our military allies.

PACIFIC FORCES

	Army	Air Force	Navy	USMC
KOREA:	1 DIV	1-2 FIGHTER WINGS		
JAPAN:		1-2 FIGHTER WINGS	1 CVBG	1 MAGTF (TBD)
HAWAII/ ALASKA:	1 DIV (LIGHT)	1 FIGHTER WING	1 MEB	
CONUS:			5 CVBGs+ SUPPORT SHIPS	1 MEB

America's military presence guarantees a stable security environment in the Pacific, allowing economic and commercial development to flourish. When I was Commander-in-Chief, Pacific Fleet, I saw firsthand how our forward presence gives us both access and political influence in the region. Our Pacific forces remind everyone that the United States is itself a Pacific power, and that we remain vitally interested in the destiny of that region. Thus, in cooperation with our Japanese allies, we plan to maintain a combat air, naval, and Marine presence in Japan throughout the 1990s, but at reduced numbers. As South Korea continues to gain confidence in its own military capabilities, we expect to be able to reduce our own ground presence, but to retain smaller deployed light and heavy forces. Air Force deployments to

Korea will also be reduced, but we will remain fully engaged on the peninsula, lest the door be opened to adventurism by the North Koreans. We expect to remain engaged in Southeast Asia through a program of frequent exercises, short term force deployments and visits by units stationed in the United States. The Defense Program provides for a capability of maintaining one CVBG continuously (operating from Japan) and one ARG and MEU (SOC) for most of each year in the western Pacific. Reflecting their geographic orientation, Reserve component forces in Alaska and Hawaii are allocated to Pacific forces.

Several of our alliance partners in the region have gained the economic capability to share more fully in the costs of maintaining mutually advantageous American military presence. Accordingly, we expect that our infrastructure costs in the region will continue to decline even as we retain significant forward presence.

CONTINGENCY FORCES

Contingency forces provide global crisis and contingency response capability across the spectrum of conflict from counterinsurgency to major conventional conflict. Because the emphasis in contingency response is on timeliness, the forces are versatile, primarily light, and drawn from the Active components. Each service brings unique capabilities to contingency forces. The Army contributes airborne, air assault, light infantry, and supporting forces. The Air Force brings the entire range of tactical forces, plus conventional strategic bombers, command and control aircraft, intelligence platforms, and so forth. Carrier-based naval air power is an essential ingredient of contingency forces, as is the amphibious combat power of the Marine Corps. Many likely contingency scenarios vary from our recent experience in Desert Storm, where numerous bases and an extensive logistics infrastructure were available ashore. Frequently, access ashore will be contested or unobtainable, requiring employment of sea-based forces. The Special Operations Forces of all services are also a major ingredient of the contingency forces. These forces, due to their unique capabilities, constitute a special resource, one which has been revitalized over the past decade. It is an investment which we must protect, even as we reduce our General Purpose forces.

CONTINGENCY FORCES

Army	Air Force	Navy	USMC
4 DIVs	7 FIGHTER WINGS	Forces from Atlantic & Pacific	
	INTERTHEATER AIRLIFT	8 SL-7s+ REMAINDER OF RRF	

PLUS:

CURRENT SPECIAL OPS FORCES OF ALL SERVICES

The forces deployed from the United States during Desert Shield/Storm provide an accurate gauge of current thinking regarding appropriate sizing of contingency forces. Recall, however, that the total force drew upon not just U.S.-based forces, but forces from the Atlantic, Pacific, and Europe as well.

BASIC MILITARY SUPPORTING CAPABILITIES

Potent though these four force packages may be, they are highly dependent upon, and incomplete without, the four supporting elements of our force structure.

Transportation capability comes to the fore in every contingency as it delivers combat power to the region and sustain that power through the contingency and redeployment. No other country possesses such a comprehensive combination of airlift, sealift, and prepositioned resources. We must ensure that this national resource remains intact through the years immediately ahead as our forces are restructured. For airlift, that means continuation of the C-17 program to replace the capability lost as the C-141 Starlifter fleet is retired. For sealift, that means a modest increase in the size of the Ready Reserve Fleet to achieve the capability of deploying a heavy Army corps in a single sailing, then sustaining that corps—plus the Marine and Air Force forces associated with our most stressful contingency scenario. For prepositioning, that means deploying three squadrons of Marine maritime prepositioning ships, and prepositioned materiel plus standby installations in both Europe and Southwest Asia.

This is a potent power projection capability, one which would seem incongruous with the overall direction of our force structure were it not for our ongoing experience in the Gulf. As surely as the heat rises in the desert, there are other "Desert Storms" over the horizon. It is only through the maintenance of our transportation capability that we will be able to project power with such confidence.

Over the past 20 years, space capability has assumed integral, though nearly invisible, roles in the functioning of both our strategic and our general purpose combat forces. In the future, space technologies will impact more than any other area the accomplishment of the military mission. Space will be the key to deterrence and in a global war will likely be a battlefield. An integrated system of satellites will provide a significant portion of the national command and control infrastructure. Communications, intelligence, and navigation functions performed by space systems are now central to the success of virtually every U.S. military operation, including the viability of our strategic deterrent. Our program for space forces includes efforts to further institutionalize and modernize current capabilities and initiatives to increase the degree to which space systems support commanders and forces in the field. We will complete deployment of several highly capable satellite constellations during this period, including the Global Positioning System. In addition, with the assistance of NASA and the President's Space Council, we will pursue the development of advanced launch systems to achieve greater reliability by modernizing our fleet of boosters and our aging space launch infrastructure.

The Chairman often refers to our military forces as the "national insurance policy." Continuing that analogy, reconstitution capability can be thought of as our "catastrophic illness" rider. That is, as we reduce our forces in response to a new strategy for a changing world environment, prudence cautions against foreclosing options available to us to provide for creation of additional force structure should such an eventuality become necessary. Reconstitution capability has three subcomponents: Industrial capability, mobilization capability, and force regeneration capability. Our plans for the research and development portion of industrial capability, not just as an element of reconstitution, but as a key supporting capability in its own right, are discussed below. I am particularly concerned over the effect future force reductions will have on production capacity. Because of commercial demands, the missile, electronics, and aircraft industries, while reduced in size, will continue to maintain a supply base and production capability. However, the number of major contractors for shipbuilding, nuclear power propulsion units, and combat vehicles may shrink to unacceptably low levels. This problem extends to subtier suppliers as well. The loss of these manufacturers of subsystem components of larger systems is a threat to our ability to field state-of-the-art weapon systems on a timely basis. Examples of the low numbers of firms supplying selected items are shown in the following table extracted from the 1991 JMNA.

Suppliers of Selected Military Items

Product / Item	Number of Suppliers	Product / Item	Number of Suppliers
Airborne radars	2	Titanium sheeting	3
Aircraft engines	2	Titanium wing skins	2
Aircraft landing gear	3	Titanium extrusions	1
Aircraft navigation systems	2	Optic coatings	1
Infrared systems	2	Needle bearings	2
RPV/Missile/Drone engines	2	MILSPEC - qual connectors	3
Gun mounts	2	Radomes	2
Doppler navigation systems	2	Image converter tubes	1
Aluminum tubing	2	Specialty lenses	2

National mobilization capability involves support for both the transportation infrastructure and for maintenance of the Selective Service System, as well as capabilities for increased recruiting and for use of trained prior-service personnel. The initial, regenerated force structure would be grown from our two Army cadre divisions. These units would be capable of restoration to combat ready status in 12 to 18 months in support of a nationwide response to a return of the Cold War threat of conventional confrontation or similar national emergency. This is new ground, and an element of the force structure that is receiving considerable attention from the Department and the services. However, the concept appears to make the most of our prior investment in equipment as well as respond to the requirement to maintain "hedging" capability while reducing the force.

Research and development capability is the final but critical supporting element of our force structure. Product improvement, modernization, and innovation all stem from R&D and put the best available weapons and supporting systems in the hands of American forces. Returning once again to our experience in the Gulf, we have convincingly demonstrated that our long-term strategy of substituting high technology for quantity has been correct and resulted in swift military success while limiting American casualties. As we transition to a smaller force which will have to meet the demanding requirements of our new strategy, the need to have high quality weapon systems that can perform in a variety of roles and missions will be even greater. We will need systems that are versatile, mobile and lethal. Our acquisition process must insure that our requirements are being met. However, as the following chart demonstrates, there is reason for concern regarding the vitality and responsiveness of the resource base and ability to compete with foreign countries.

US Relative Standing In Emerging Technologies

TECHNOLOGY	R & D (Current / Future)	PRODUCT INTRODUCTION (Current / Future)
Advanced materials	Even /Losing	Behind/Losing
Advanced semiconductor devices	Even/Holding	Behind/Losing
Artificial intelligence	Ahead/Holding	Ahead/Holding
Biotechnology	Ahead/Losing	Ahead/Losing
Digital imaging technology	Even/Losing	Behind/Losing
Computer-integrated manufacturing	Ahead/Holding	Even/Holding
High-density storage	Even/Holding	Behind/Losing
High-performance computing	Ahead/Holding	Ahead/Losing
Opto-electronics	Even/Holding	Behind/Losing
Sensor technology	Ahead/Losing	Even/Holding
Superconductors	Even/Losing	Even/Losing

America's lead in the laboratory, while far from secure, is at least unquestioned in a host of critical technologies. More troublesome is our failure to retain a position of leadership in developing those technologies which translate the fruits of research to usable end products. This is a national problem beyond the capability of defense industry alone to rectify. But we must all do our share to make the investments necessary to climb back on top in the area of industrial productivity.

FORCE STRUCTURE

	FY 1990	FY 1995
Army Divisions	28 (18 active)	18 (12 active)
Aircraft Carriers	13	12
Carrier Air Wings	15 (13 active)	13 (11 active)
Battle Force Ships	545	451
Tactical Fighter Wings	36 (24 active)	26 (15 active)
Strategic Bombers	268	181

TESTING AND RESOURCING THE FORCE

Bringing these force packages together reveals the breadth and depth of the pending changes to our force structure. During the internal debate, which fashioned this force structure, each service's contribution was tested at the margin to ensure adequacy in the most stressful scenarios in our strategy. The 1991 JMNA is a comprehensive assessment of the force prepared in coordination and consultation with the Military Service Chiefs of Staff, the commanders of the unified and specified commands, the U.S. Coast Guard, the Intelligence Community and the Joint Staff. When constructing the force, we took special care to protect unique capabilities such as Special Operations, rescue, and amphibious forces as well as missions such as counterdrug operations and disaster relief. We also took care to consider the vital contributions of Reserve components to the total force. As a result, our future plans for Reserve component forces—including roles, missions, structure, and readiness—fully complement the Active forces of each service. Last summer's program review and the fall budget review ensured that forces matched our strategy and investment programs matched our forces.

OPERATION DESERT SHIELD/STORM

Operation Desert Shield occurred at a critical and yet fortuitous time for us. The new strategy and the logic behind our new force structure were well developed before the crisis in the Gulf arose. But, as the contingency unfolded, operational experience confirmed our view that we must remain prepared to deter, and confront, regional troublemakers. It also confirmed a continuing requirement for prepositioning of equipment backed up by a massive and rapid deployment capability. And it demonstrated that a coalition of nations providing forces and support can provide substance to unity of purpose.

Desert Storm proved that our current forces are certainly up to the challenge of combat operations. Our future force structure will also have a capability to succeed in a Desert Storm-type contingency. However, it will be more difficult. Our flexibility will be reduced and our total response time may be longer. We are now thoroughly reviewing the operation for lessons learned and will apply them accordingly. Clearly, one lesson learned is that we must improve our strategic mobility, particularly for rapid sea movement of heavy forces and supplies. We must also continue to pursue opportunities for international cooperation and burdensharing. At the same time, we will seek to retain key bases while pursuing access rights around the world.

SUMMARY

Our proposed force packages and supporting forces have been structured in full consideration of our strategy and our assessment of future events. In this regard, the reduced force levels we are proposing are reached in an orderly manner, which provides us with the flexibility to re-evaluate our decisions and fine tune the force in response to change and emerging world events. Although we have programmed for smaller forces based upon reduced requirements and a corresponding reduction in defense resources, we must be careful to ensure that our defense program does not become a self-fulfilling prophecy in which force reductions continue in isolation from world events.

Chairman NUNN. Thank you both. We appreciate it.

Senator Warner, I am going to start with you and rotate back and forth.

Senator WARNER. Thank you, Mr. Chairman.

Gentlemen, I think your written presentations as well as your oral statements were very satisfactory. I am sure that during the course of the Q&A period we will flesh out some concerns that the committee may have.

I will start with you, Secretary Wolfowitz.

I think a clever journalist could take your statement, both oral and written, and write that America is posturing itself to be the world policeman.

I don't see and hear enough emphasis on our getting our allies to take up bigger portions of the responsibility, certainly for their regions and their security interests in regions beyond where they are geographically located.

Am I wrong?

Mr. WOLFOWITZ. In fact, I would point out that one of the three major trends that I noted that affects this reshaping of strategy is, in fact, the recognition that our allies are stronger, that they are capable of assuming more of that burden. That has really been the central element in allowing us to look at reductions in the Pacific, where, really, the threat has not reduced significantly at all. But the capability of our allies to face that threat, the capability of the South Koreans to play a leading role in addressing that threat permits us to reduce our own contribution.

Senator **Warner**. Well, one of your basic assumptions has been "increasing capabilities of our allies." You state that. But I don't find the footnotes or the points in the testimony, oral or written, to document it.

I think it is absolutely essential that we bring to bear upon our allies pressure, if necessary, to require them to take up a greater degree of these responsibilities. Our budget here at home is past crisis proportions. It is getting to the point where I don't know if we have any solutions.

I am going to support the President and the Secretary of Defense in his overall cutback strategy. I think you have stated that today and the basis for it. But I want to see in here where you are saying that we are going to put more pressure on the allies to do more.

Mr. **Wolfowitz**. We have been putting more pressure on the allies. I agree with you very much about that.

Senator **Warner**. Is it in here and I missed it?

Mr. **Wolfowitz**. Not in exactly those words. But when I say a major element of our strategy——

Senator **Warner**. We're going to have to get tough, and you're going to have to get tough up here in your testimony before these committees, because this is followed.

I say to you, my good and respected friend, this is the place to start with those points.

Mr. **Wolfowitz**. I take your point, Senator.

Senator **Warner**. Now you can go ahead and please take me on if you think I am in error here, because I want your comments.

Mr. **Wolfowitz**. I agree with you 100 percent. That is why I put such stress on the importance of what our allies can do and why, in fact, the President has put such stress on making sure that our allies, and not only our allies but a whole range of other countries, contributed to the costs of Desert Storm or contributed forces to the operation or both.

We could not have done what we did, I think, without those contributions.

Senator **Warner**. Certainly diplomatically. But there were valuable military contributions, no doubt about it, from Great Britain, France, Saudi Arabia and the Kuwaitis. I do not dismiss that for a moment.

This is a trick question and I don't like it. Could we 5 years from now do what we did in the Gulf? It is a nice, neat question to ask, and you say it against a projected 5 year reduction program.

But suppose the slack, that we create by virtue of our force reductions over that 5 years, were taken up by the allies. The simple answer then to the question would be yes, we could do the same thing 5 years hence. And the answer ought to be stated what we collectively with our allies could do 5 years hence. We could do it, and do it equally well, if they will pick up some of the slack that we, by necessity of budget trends, have to develop with the reduction of our forces.

That is the way I would hit back at that question and have hit back at it in the few instances that I have spoken on it in public.

Now, in the course of the development of this year's budget, predicated on this strategy analysis, can you point to any cutback or reallocation in budget authority of any of the three military departments? In other words, did one department go up and another department go down as a result of this strategy?

Admiral **Jeremiah**. I would address that in this way, Senator. I would say that we don't look at the problem in that way. We put the strategy on the table. We put the force packages on the table.

Senator **Warner**. You have to put the threat on the table, too.

Admiral **Jeremiah**. You put the threat on the table. But I liken the threat today to, well, I will use the analogy I have used in several speeches, and that is this. For 40 years we have gone out into the arena, into the colosseum, and looked at a single gladiator out there that we do battle with. We know who he is, we know what he has been equipped with and we know what is going on.

But we don't have that kind of threat today. What we have today is we go out into that arena and the floor is empty. But we have a lot of doors around the perimeter. And we don't know what's going to come out of those doors. You don't know if you are going to get lions, or a guy with a Trident in a net, or another full-scale gladiator, or all of the doors at the same time.

So going back to your earlier question, we are not real good on this one, I will tell you. But there comes a level where you want to invest yourself in your own national interest, where you are unwilling to hand over to the allies, or to an ally, the responsibility for defending the United States, particularly in the strategic world.

Senator **Warner**. Well, I am not suggesting that. I am not suggesting that at all.

Admiral **Jeremiah**. I know. But the whole thing is that we may be very well close to that level right now. We need to look at that question.

Senator **Warner**. We are also facing a crisis here at home with our fiscal problems, which can be a threat as great as that posed by any military power in some ways.

Admiral **Jeremiah**. We acknowledge that, and that was the purpose of supporting this and recognizing it in the President's objectives.

Senator **Warner**. I will address this next question to both of you and will start with you, Secretary Wolfowitz.

Has the Department of Defense and the Joint Chiefs of Staff formulated a requirement for an anti-tactical ballistic missile or ATBM system, which system could be deployed overseas to protect our various military forces, including forward deployed forces, Army and Marine contingency forces and Naval forces?

I ask that against the background, of course, of our experiences in the Gulf, where the SCUD system was successfully interdicted by the Patriot, a system that was never designed to do that. Fortunately, however, the Patriot was modified in basically the nick of time to be deployed, both in Israel and Saudi Arabia. It was a system that performed with remarkable success.

So, having escaped the consequences of that attack by SCUD, which is a relatively crude, almost World War II vintage type terrorist weapon, what are we going to do? Are we going to get into high gear now? How are we going to protect our forces when deployed forward in the future?

Mr. **Wolfowitz**. Let me ask Admiral Jeremiah to address the specific requirements question. But, in fact, we have drawn the same conclusion from the Gulf experience that you just pointed to, Senator: the importance of improving our anti-tactical ballistic missile capabilities. Secretary Cheney has directed the SDIO to put a special emphasis on that program now.

Admiral Jeremiah may want to speak to that.

Senator **Warner**. Wait a minute. Tell us a little bit about what Cheney did there. When did this occur and in what form? What is this special directive to SDIO and when did it develop?

Mr. **Wolfowitz**. I would have to get the details of it for the record for you, Senator.

Senator **Warner**. Well, give us the best you can now from memory.

Mr. **Wolfowitz**. I believe that the head of SDIO, Ambassador Cooper, has been directed to create a special office for anti-tactical ballistic missile programs and to put a special emphasis on developing those programs and improving our capabilities to deal with advanced tactical ballistic missiles, not just with the sort of simple threats presented by the SCUD.

Senator **Warner**. And that took place here, within the last 30 days?

Mr. **Wolfowitz**. To my recollection, yes. But I would have to get a date for you.

Senator **Warner**. Generally speaking.

[The information follows:]

The Congress in the Fiscal Year 1991 Appropriations Act emphasized the need to accelerate research on resolving the threat of tactical missiles that now face the United States, its forces and those of our allies. The bill established two new program elements within the Department of Defense, nearly tripled the funding and directed that central management of those programs be placed directly within the Office of the Secretary of Defense. On November 9, 1990, the Deputy Secretary of Defense, in order to implement the congressional direction, approved and identified the Director, SDIO as the central manager for all DOD programs supporting the development of this technology.

This required an expansion of the then existing Theater/Tactical Missile Defense organization within SDIO to include the additional responsibilities of a theater missile defense program office charged with the planning and management of full-scale development and subsequent program deployment. The office will perform such new functions as: preparation of the Department Master Plan, preparation of reports to Congress as required, and coordinating plans and requirements with the service, Joint Staff, and OSD offices as part of the DOD acquisition process. These new responsibilities will be in addition to continuing responsibility, with increased scope, for managing a variety of activities, including program experiments, missile flight tests, architectural analyses, integration with both air defense and strategic missile defense systems, and preparation of budgets and reports.

Based on the requirements outlined above, the Director, SDIO, realigned the organization and created a Deputy for Theater Missile Defense, as an equal counterpart to the Deputies for Technology and Strategic Defense programs. This organizational realignment became effective on March 23, 1991.

Senator **Warner**. I believe my time is up. I don't want to overstay my welcome.

Chairman **Nunn**. I will permit the Admiral to answer your questions, Senator Warner.

Admiral JEREMIAH. The requirements issue falls under the responsibility of the JROC, the Joint Requirements Oversight Council. We went to the Chiefs several months ago in connection with the SDIO GPALs discussion, with respect to what requirements are we trying to satisfy here. The Chiefs reconfirmed their requirement for the Phase I system, in which this sort of capability could be a subcomponent.

But, as we looked at it, we felt that the definition, particularly for the theater deployable kinds of anti-ballistic missile systems, was not as crisp as it needed to be. We have gone out to the unified commanders and asked them to define with some specificity what their theater requirements are.

That response is in and we are working it in the staff. So we will go into the requirements process with a defined statement for that particular kind of capability.

Senator WARNER. Gentlemen, I find that very reassuring. It is an objective I have placed emphasis on, as I think my Chairman has and other members of this committee. We are pleased that you have provided us with that information today. Thank you.

Chairman NUNN. Thank you, Senator Warner. Senator Exon.

Senator EXON. Mr. Chairman, thank you very much.

Mr. Secretary, Admiral, welcome to you. We are delighted to have you here this morning.

Let me go into two or three matters very quickly.

First, Mr. Secretary, in your statement, you say that we recognize the toll that overseas duty takes on our forces. Then you go on to say that in other words, we attempt to provide our people with a reasonable amount of time in the States between tours overseas.

That gets into the manpower situation.

What are the timeframes there that you are talking about? Is it 2 months, 6 months, 1 year, 1½ years, or 2 years?

Mr. WOLFOWITZ. They obviously vary service by service and they also depend on the kind of tour. The Navy, as I think you know, had a very bad experience 10 years ago when deployments started to extend well beyond the 6 month limit that we now have imposed, and ships would come home and large fractions of the crew would fail to reenlist after that experience.

I think sea duty probably poses the most onerous rotation requirements. But even overseas accompanied tours pose problems. It varies service by service.

Admiral Jeremiah might want to fill in the details for you.

Admiral JEREMIAH. I think there is an across the board policy on the overseas tour lengths. We have tried to push out to what we consider the maximum numbers available. I think 4 years is the maximum tour length for most of them.

Senator EXON. 4 years?

Admiral JEREMIAH. I think there are some that can go for as long as 4 years. Three years is the normal overseas tour length, accompanied.

Rotational tours for deployed forces, like marines afloat and naval forces afloat, the Chief of Naval Operations and Commandant have worked on an objective of 6 months. That was stretched during Desert Storm and Desert Shield to about 8 months for some of those who were there at the very beginning.

We have just completed the global CVBG Conference between the two fleet commanders, with their recommendations and how they support the theater CINCs, and we have planned now to be able to revert, post-Desert Storm, to the 6-month deployment policy for those carrier battle groups and in deploying marine amphibious forces.

Senator **Exon**. Well, there isn't any that are at a minimum of less than 6 months, are there?

Admiral **Jeremiah**. I think we have some rotational forces that deploy for 90 to 120 days—air forces, for example.

Senator **Exon**. What I'm trying to get to is none of our forces in the Gulf war were there for more than 8 months, right?

Admiral **Jeremiah**. I think we had, I will say 8 months, 8 to 8½. Yes, sir.

Senator **Exon**. Hasn't it been very typical, Admiral, for sailors to be gone for between 6 and 8 months on tours? That is pretty standard, isn't it?

Admiral **Jeremiah**. No, sir. I deployed for 8½ months on *Saratoga* in 1986, and since that time, we have been able to hold to the 6 month rotation policy until Desert Shield came along.

During Desert Shield, we deployed out of our carrier force, even though at the highest level there were only six there at any given time, we used 10 of the 11 deployable carriers. The others were in SLEP and overhaul. We used 10 of the available carriers in that operation, either early-on or coming in at the end of the cycle.

Senator **Exon**. This is taking way too long to answer.

Mr. Secretary, answer this. For a GI infantryman in the U.S. Army, what term of duty are you talking about when it says that you want to return them to the United States?

Is it 6 days, 6 months, 6 years?

Mr. **Wolfowitz**. Again, if it is an accompanied tour in Europe, it could be 2 years or 3 years. If it is an unaccompanied tour in a hardship post, it would be in the neighborhood of 6 to 12 months. It really is going to depend on those kinds of differences.

Senator **Exon**. Thank you. That's good.

Now let me get to the more overall encompassing matter.

I was in the Soviet Union last week. I am convinced from what we learned there that they are moving very aggressively ahead with their ICBM modernization. We are having a great deal of difficulty in doing that here in the United States for lots of reasons.

Let me ask you this question. For the record, I would like both witnesses to comment on why they think the B–2 bomber is an essential component, if it is in your view, of the maintenance of our strategic triad and nuclear deterrence.

Mr. **Wolfowitz**. I think it is very fundamental to our whole strategic deterrent doctrine to maintain a triad, and as a critical element of that leg, I think the air breathing leg has a kind of unique role, which, in fact, we have recognized. We put some stress on that in the development of our whole arms control position because it has some unique flexibility built into it, it has some unique ability to respond to warning and then be recalled, and, basically, because it contributes a different mode of delivery.

But in order to maintain that force effectively, we have to keep modernizing it. The Soviets invest enormous amounts in their air defenses. In fact, it is a little hard to fathom how they manage to do it with the economy they have. But they keep at it.

In fact, one of the clear lessons they have drawn from Desert Storm is to invest more in air defense, I believe.

We need to keep modernizing that wing of our force, that leg of our triad, in order to maintain an effective deterrence.

That is the central reason. I would add that I think there are two additional considerations that are important here.

They are not new rationales. The main reason for the B-2 is its contribution to strategic deterrence. But I think also it is important, and this recent experience demonstrates that it is important, for us to be in the stealth business, for us to maintain the leading edge in this new technology. This is not only for stealth itself, but there are going to be counter-measures to stealth, and counter-counter-measures to stealth. It is important for us to remain the leader.

Finally, the air breathing leg of the triad, as we have just seen in this crisis, is the only part of our strategic forces that can also contribute in conventional conflicts.

Senator EXON. Admiral, how many of the 600-ship Navy are you ready to give up to continue some line of procurement on the B-2 bomber?

Admiral JEREMIAH. Oh, we have given up for a variety of reasons, about 150 so far.

Senator EXON. How much more?

Admiral JEREMIAH. I think you have to look at the balance, and what you have before you is a program that is balanced by the Secretary that looks at the B-2 and other programs.

I support the B-2. I think it is an important bomber. I think it is an important capability for our forces, just for the reasons that have been specified by the Secretary.

I think that stealth is a fundamental ingredient of any force in our future aviation force structure. We do not have that in the current strategic bomber force and you will need it for the survivability of that leg in the future.

Senator EXON. Thank you. My time is up.

I just want to say to you, Mr. Secretary and Admiral, that I have been through many, many sessions where these two questions have been asked. I really must say that I think the lack of vim, vigor and vitality—vim, vigor and vitality—that the B-2 is being advanced, promoted and maybe defended by the Department of Defense lacks what I think we are going to have to have if that system that I think needs to remain is going to be in place.

Thank you very much for your time.

Chairman NUNN. Thank you, Senator Exon. Senator Levin.

Senator LEVIN. Thank you, Mr. Chairman. Let me add my welcome to our witnesses.

Mr. Secretary, first of all, I would like to talk to you about the ABM Treaty.

Has the administration decided to withdraw from the ABM Treaty if we cannot negotiate changes in it so as to allow the development of systems, components, which are now prohibited under either the broad or the narrow interpretation of the ABM Treaty?

This is not a broad/narrow issue that I'm asking you about. This has to do with whether or not the administration has decided to withdraw from that treaty in order to develop and deploy components which are now, by any interpretation, ABM constrained.

Mr. WOLFOWITZ. We certainly haven't made any such decisions, Senator, and that would be a rather major decision that you would have heard about long before my coming up here.

Obviously, we have been pursuing in the space talks with the Soviets in Geneva an attempt to work out some kind of arrangement that would permit a transition from the present ABM regime, what we call a "cooperative transition," to something that would permit both sides to deploy defenses in a way that would contribute to stability and contribute to deterrence.

I cannot say that we have come very far in those negotiations. At the same time, we are very actively pursuing our SDI program. As President Bush explained in his State of the Union Message, we are putting particular focus in that program on trying to get the capabilities against the sort of regional threats that Senator Warner spoke about a few minutes ago.

Until it is clear to us what we want to do, what the technology will permit and what is important, I do not think we are ready to undertake a decision about the longer-term aspects of the treaty. But it is obvious that one can imagine problems that it would present. I think that is the reason why General Scowcroft wrote his letter to the Congress in support of Senator Warner's amendment.

Senator LEVIN. At some point the treaty will bump up against SDI by anybody's interpretation. What you are saying, then, is the administration has not decided what to do when that point comes?

Mr. WOLFOWITZ. Correct.

Senator WARNER. Are you assuming, Senator, that point has not been reached already, if I may judge from your question and if I may interject?

Senator LEVIN. Oh, I appreciate that.

Is there anything in this budget which would fund any component or program which would violate the narrow interpretation of the ABM Treaty?

Mr. WOLFOWITZ. No, there is not that I am aware of.

We have, as you know, a Compliance Review Group that looks very closely at everything we do in relation to the treaty. We have said repeatedly that if there are questions that raise questions of treaty interpretation, we will come up here to discuss them.

That group is constantly looking at questions. There are some that it is looking at right now.

Senator LEVIN. I'm not sure this is precisely the point that Senator Warner very properly raises, but, then, we have your assurance that there is no funding requested in this budget for any item the development of which would violate the narrow interpretation of the ABM Treaty?

Mr. WOLFOWITZ. I believe that is correct, Senator.

Senator LEVIN. If it is not correct, would you correct the record later on and let us know?

Mr. WOLFOWITZ. Yes, sir.

Senator LEVIN. We had General McPeak in front of us a few weeks ago talking about strategic modernization. He pointed out that we are upgrading our Minuteman III missile systems in a number of ways. There were a number of upgrades that he outlined. We had long lead money in this budget request for guidance sets for the Minuteman III. The completion date for that guidance set would be 2001.

There is a significant amount of money that is involved in the upgrades to the Minuteman III. You are looking at strategic modernization of the land-based portion of the triad. Is it fair to say that you will look, down the road, at a number of options? One would be mobile missiles, another would be missiles in silos, and when it comes to missiles in silos, will you be looking at an MX in silos? Would you be looking, too, at Midgetman in silos, and also at Minuteman, the upgraded Minuteman III in silos? Is that a fair menu of the options for the modernization of the land-based leg?

Mr. WOLFOWITZ. I believe that is the menu, Senator.

Senator LEVIN. Okay. The reason I say that is that in the Admiral's testimony, you left out what to me is a very crucial item on that menu, which is the Minuteman III upgrade as the possibility for the fixed silo possibility. I want to make sure that is on the menu.

Admiral JEREMIAH. Yes, it is.

Senator LEVIN. Okay. Does the administration still believe that a START agreement is in our national security interest?

Mr. WOLFOWITZ. Absolutely.

Senator LEVIN. And the same with a CFE?

Mr. WOLFOWITZ. I hate to make comparisons, but I would say even more so.

Senator LEVIN. All right. My last question, Mr. Secretary, goes to you.

You indicated in your statement that President Bush has said on many occasions that we hope the process of reform in the Soviet Union will succeed. We still hope it will be successful and the Soviet leaders we believe still have it in their power to take steps which would put reform back on track.

Do you know of any Western strategy, and I would include in that Japan and other allies, any Western strategy which might even marginally improve the chances of that reform succeeding? Do you know of any kind of proactive strategy that is being considered in the administration? I know it would have a marginal impact at best. But do you know of any consideration being given to that?

Mr. WOLFOWITZ. I guess I would say, broadly, that, while it's true the main determinants of what happens in the Soviet Union are internal to the Soviet Union, I do think that it is clear at this point in its history that the Soviet Union has a big stake in its relations with the West. I believe the fact, which I think is very clearly evident to the leadership of the Soviet Union, that those relations are going to be badly damaged if they go down the wrong course has an influence. I think the kinds of things we have tried to do—maintaining contact with democratic groups in the Soviet Union, indicating very clearly our support for reform—these are marginal, perhaps. But I think it is perhaps part of the reason why things have not gone more sour than they have recently.

Senator LEVIN. Well, I asked for a proactive strategy, not so much the prospect of damaged relations with the West, but any incentives, any carrots? Is there anything where we could take an initiative to try to see if we can't positively boost the prospects of reform?

Mr. WOLFOWITZ. I think the whole range of cooperative activities that have been undertaken with the Soviet Union over the last few years, the kinds of programs that you mentioned—you mentioned Japan, for example. President Gorbachev is going to make an historic visit, the first by a Soviet leader, I believe, to Japan, very shortly. The kinds of things the Japanese are going to talk about with the Soviets I think are part of the thing that is the carrot that they are going to lose if those relations turn sour. I don't think you can really distinguish.

There is a lot in this relationship for the Soviet Union. We have been putting a lot into that relationship. I would say we have even been making it clear that one of the things the Soviet Union gains from this relationship is this whole change in our strategic emphasis. When Secretary Cheney was in Moscow, both when he talked to President Gorbachev and when he talked to the Supreme Soviet, and emphasized the new direction of our strategic thinking, it was very much welcomed by them as the kind of thing that makes it possible to encourage and support military reform.

In fact, I guess I would have to register my dismay that even in the face of this rather dramatic strategic initiative on our part, we now see so much resistance by the Soviet military to reductions, I hope they will get back on the reductions track. But it is rather incredible how, in the face of both their economic difficulties and our strategic initiative, they are now talking about increases in defense spending and not reductions.

Senator LEVIN. Thank you. Thank you, Mr. Chairman.

Chairman NUNN. Senator Warner.

Senator WARNER. Mr. Chairman, I thank you for recognizing me for a brief second round here before you get started.

I think in fairness to Senator Levin—if I might get the Senator's attention—I broke in on your question and I did it for a specific purpose. I want to clarify it now with the Secretary.

Mr. Secretary, you responded, I think quite accurately, that you had no knowledge as to whether or not any elements of the 1992 budget would be in violation of the narrow interpretation of the ABM Treaty. You correctly said that the matter was under consideration by the Compliance Committee.

Would it be fair to say that they have before them a number of issues in the 1992 budget which, on their face, in my opinion, raise a serious question of whether or not they could be found eventually by the Compliance Committee and such review authority above that committee as may exist, I presume right on up to the President, as to whether or not they pose violations of the narrow interpretation of the ABM Treaty?

In other words, I am asking you to reopen your statement and ask whether or not you have knowledge that there are issues before that committee which, in fact, could result in a conclusion by the Compliance Committee and such reviewing authority above that the thresholds as established by the narrow interpretation would be breached?

Mr. Wolfowitz. I do know, Senator, that there are issues before that committee, as in fact there frequently have been in the past. I think these particularly concern the question of what constitutes tactical ballistic missiles versus strategic. Those are under study. If the conclusion of that study is that they raise treaty compliance issues, we will obviously be up here to report on that.

But, number one, those are under study. Therefore one cannot conclude either way as to how they come out. Also, I cannot go into the details now at this point.

Senator Warner. I understand.

Based on what limited information I have, I believe that there are issues, that they will be found to impact, certainly in the judgment of some of us, maybe not the Compliance Committee, on the 1992 budget. What concerns this Senator most significantly is that some of those issues go to my principal concern, the ATBM issue. I have said enough on that now.

Chairman Nunn. May I amend the question and make it a little broader for both Senator Levin and Senator Warner?

One of the biggest questions is not related to whether it is the narrow or the broad question. That is the question of what is new technology. There has never been a definition given.

Somebody has been laboring to try to define that for years. One of the most serious questions—it doesn't matter whether it is narrow or broad—is that whole question of what is new physical principles.

Mr. Wolfowitz. Yes, new physical principles.

Chairman Nunn. So, in answering the question, I would like to ask you to get us an answer on that. We have been waiting for it now for years. I believe "other physical principles" is the term.

Senator Warner. "Other" is the correct word.

Chairman Nunn. That question is not related to any debate on the narrow and broad issue. It applies to either. I think we have to get an answer to that one, too, if we could.

That may be in the State Department. But maybe we could get you all to let us know who we should get in touch with to get that if it is not within the Defense Department jurisdiction.

[The information follows:]

To further clarify my remarks above, the ABM Treaty negotiating record makes clear that ABM systems based on other physical principles would be different than systems consisting of ABM interceptor missiles, ABM launchers, and ABM radars. In fact, a system including a high energy laser to counter strategic ballistic missiles was given as an example of such a system. However, no general definition was given, so this issue can only be addressed on a case-by-case basis taking account of the specific nature of any ABM system in question.

Senator Warner. My second question——

Senator Levin. I wonder if Senator Warner would yield for a minute, and I thank him for that clarification.

You answered my question that, as far as you know, there is nothing in this budget——

Senator Warner. It's his knowledge.

Senator Levin [continuing]. To your knowledge, as far as you know—that's why I said, "to your knowledge, as far as you know," there is nothing in this budget which would violate, if funded, the narrow interpretation of the ABM Treaty; but if there were, you would let us know for the record.

Mr. WOLFOWITZ. Right.

Senator LEVIN. That's what I'm going to rely on. I'm not talking about issues under discussion in front of that group. Issues under discussion is important, and I am glad Senator Warner raised that question.

I'm talking about items in this budget request. So would you let us know for the record?

Mr. WOLFOWITZ. Absolutely.

All tests planned for fiscal year 1992 that are sufficiently defined for compliance review have been found by the Compliance Review Group to be consistent with the ABM Treaty. However, additional or modified SDI tests may yet be planned for fiscal year 1992 that would need to be reviewed; they would be reviewed after the plans have been sufficiently defined.

If there is anything different about that, I will certainly let you know, Senator.

Senator WARNER. I think, Mr. Secretary, there are some long lead items in the 1992 budget. It is not the funding. It is the fact that we fund them and eventually they would become integral parts of some system.

Chairman NUNN. I think that probably, if I could interject, would have applied to a lot of items over the years. The question is whether you are going to use your testing in compliance, whether you are going to make sure that you direct that the testing be done in compliance. There are several different ways to do most tests. Some of them are in compliance and some of them are not.

I would think that for years we have had certain items in the budget that, if not directed, if the administration did not direct that they be used in accordance with the interpretation, the more narrow interpretation or the traditional one, could have breached.

So, Senator Warner, you probably may want to refine these questions and submit them for the record because I would think that the answer on your question would be not only are there items in this budget that are long lead, but there have been items in budgets for several years that, if used in certain ways, could be made to breach the narrow interpretation or the broad interpretation of the ABM Treaty, depending on how they are directed to be used.

The real bottom line question is whether the administration has anything in this budget that will breach either the narrow or the broad interpretation of the ABM Treaty in terms of the intent of the administration in its use.

Senator WARNER. And testing, more specifically.

Chairman NUNN. Right, and testing.

Senator WARNER. Mr. Chairman, I have just a quick second question.

Chairman NUNN. So I would think maybe all of us would want to make our questions a little more precise on this point and submit them to the witnesses for the record.

Senator WARNER. I think that is a good suggestion and I will avail myself of that opportunity.

My last question, Mr. Chairman, is this. As we see the Warsaw Pact dissolve, as the security for the emerging democracies in the Eastern European body of nations becomes more complex, what thoughts are there that we should approach a revision in the NATO framework, maybe it is in the fundamental treaty itself, to provide some security arrangements for those nations? Is there any movement in this direction? Is there any movement within the administration to in turn ask NATO to convene and consider that?

Mr. WOLFOWITZ. It is a no and a yes answer, Senator. It is no with respect to thinking about revising the NATO Treaty or expanding the membership of NATO. But the yes, I think, is that yes, there is a recognition that, giving these newly independent countries some degree of relationship with NATO is something that can serve the security interests of all of Europe. When I say "all of Europe," I include the Soviet Union.

That was specifically recognized at the NATO summit last June, when NATO leaders issued an invitation to all of the then-Warsaw Pact countries, including the Soviet Union, to send representatives to Brussels, ambassadors, in effect, to NATO. It is that kind of process that has led, in effect, to President Havel's invitation to address the North Atlantic Council, from which I quoted just now.

It is obviously of great importance to the continued stability and security of Europe that these countries, that have so extraordinarily achieved independence and are struggling to solidify the institutions of democracy should succeed in that effort and should remain independent, and any reversal of that I think would be a very, very grave threat to the security of the whole continent. But it is also a reason, I think, for being very, very cautious about anything that constitutes revising the NATO Treaty or writing new security guarantees.

Senator WARNER. Thank you very much. Thank you, Mr. Chairman.

Chairman NUNN. Thank you. Senator Thurmond.

Senator THURMOND. Thank you, Mr. Chairman.

Mr. Secretary, the United States continues to maintain our long-term reliance on nuclear deterrence. How credible is this deterrence if we can neither manufacture nuclear weapons or make nuclear weapons material? Aren't we becoming a "former nuclear power?"

Mr. WOLFOWITZ. Senator, getting our critical materials production going again is absolutely central to maintaining an effective deterrent. I certainly agree with the thrust of your question that we've got to get moving with that.

I think we are a long way, however, from losing the credibility of our force and I think it is still a very formidable capability. But long-term, yes, it will be a problem.

Admiral JEREMIAH. Senator, if I could add on to that for just a minute, I think it is very important to the continued modernization of our strategic force with respect to safety that we have the capability of Rocky Flats and also with respect to other capabilities that we continue at Savannah River, so that we have a modern industrial capacity to support our strategic forces.

Senator THURMOND. Mr. Secretary, isn't it true that the United States has not been able to manufacture or replace a single nuclear weapon for more than a year? What effect does this have on our national security?

Mr. WOLFOWITZ. It has effects, as Admiral Jeremiah just said, on our ability to make the kinds of changes to our strategic posture and our nuclear posture that have allowed us over the years to make sure that that is safe and secure. It has some impact on our Trident program.

So far, those impacts I think are minimal. But if that problem continues for a long time, it will begin to affect both the effectiveness of our deterrent and, ultimately, perhaps the safety of some of the weapons that we deploy.

Senator THURMOND. Admiral Jeremiah, the Joint Military Net Assessment makes a strong point, and rightly in my opinion, that the United States is at risk because assembly lines have gone cold and because the lead time to deliver key components has gone to 29 months.

My question is this. What is the lead time for the delivery of new nuclear weapons?

Admiral JEREMIAH. I guess I would prefer not to answer that in an open hearing. The lead time is——

Senator THURMOND. Well, then, don't answer in an open hearing if you shouldn't.

Admiral JEREMIAH. The lead time is longer than we would prefer it right now, and we have to have Rocky Flats in order to provide a capability to continue with certain kinds of weapon systems.

Senator THURMOND. Admiral Jeremiah, we need to have the utmost confidence that our strategic systems will work when required. The JCS sets the standards for the confidence required and the reliability of these systems. You used to require that the Air Force conduct seven MX tests per year. Now they are proposing to drop that to three. That will mean that a degradation of 10 percent will now not be detected for 7 years. Is that acceptable?

Admiral JEREMIAH. In the judgment of the Strategic Air Commander, who looked at the question very completely when the decision was made, he feels that he is comfortable with that testing profile, and we agree with that.

Senator THURMOND. Secretary Wolfowitz, on the assumption that the United States will retain only a corps-size element in Germany, will the United States be able to retain its leadership role in the NATO community?

Mr. WOLFOWITZ. I believe that we can maintain our leadership role in NATO with that kind of deployment and with the kind of reinforcing capabilities that we would have to back it up, assuming that that remains the level that is appropriate to the threat and the environment that we face.

Leadership obviously means also that if the environment changes, if the world becomes more threatening, then we have to be the leaders in responding to that also.

Senator THURMOND. Admiral Jeremiah, there is a great deal of uncertainty in the Reserve community regarding the role of Reserve combat forces under this new strategy. Would you briefly describe what the role of the National Guard and Reserve combat units will be under your new strategy?

Admiral **Jeremiah**. First of all, Senator, you know that the performance of the Reserve and National Guard units was absolutely spectacular across the board in Desert Shield and Desert Storm. I don't think there was anyone who was anything less than pleased by the first rate performance of the individuals and the organizations that performed there.

With respect to this strategy, we are looking at a continuation of that relationship in the total force concept between Active components and Reserve components. As we look downstream and look at the need for instantaneous forces, large forces, across an inter-German border, for instance, as compared to the situation that we see today, we think that we have more opportunity to reconstitute forces. Therefore, we feel that probably you will see a part of that function being carried out by Reserve forces.

From what our experience was in Desert Shield and Desert Storm, we believe there will continue to be emphasis on combat support and combat service support units in the Reserve. We cannot perform without that capability today.

One of the things I think that we want to examine in the context of lessons learned from Desert Storm is whether we may have to shift a little of that capability back and forth between Active and Reserve in order to have a fully sustained, initial increment for a first increment of forces in a crisis or a contingency scenario.

Senator **Thurmond**. I think the Reserve and the National Guard will perform if they have the right equipment and the right training, and they are less expensive to maintain than the Active force.

Admiral Jeremiah, under the new military strategy, we must be capable of rapid deployment of our forces. Do we currently have the means to support this deployment effort? If not, when do you envision that we will have the capability?

Admiral **Jeremiah**. Every military officer I suppose would tell you that he will never have the capability that he wants to do what needs to be done. The key to providing the capability will be the C–17, to replace the C–141s, which we used very heavily, as you know, in Desert Shield and Desert Storm. That effort has to continue. We have to get on with the implementation of the mobility requirements study recommendations that need to come forward to the Congress and move forward with the procurement of roll-on and roll-off ships necessary to improve our sealift capability, so that we have the necessary lift to move rapidly to a contingency scenario.

Senator **Thurmond**. Mr. Chairman, those are all the questions that I have.

I just want to thank you gentlemen for your appearance and your contribution to the hearing.

[The prepared statement of Senator Thurmond follows:]

Prepared Statement by Senator Strom Thurmond

Thank you, Mr. Chairman: Secretary Wolfowitz and Admiral Jeremiah, I join the Chairman and the members of the committee in welcoming you to today's hearing on our Nation's post-Cold War military strategy.

Last year at this time, as the committee was beginning its deliberations on the National Defense Authorization bill there was a definite lack of consensus on what our national strategy should be in response to the historic events in Eastern Europe. The Congress responded to this lack of a strategy by continuing the cuts in the defense budget and mandating reductions in our force structure. That, in my judgment and the judgment of several of my colleagues, came close to placing this Nation at risk.

Although Secretary Cheney and General Powell should be congratulated for responding to the challenge and authoring this new U.S. military strategy, I have some concerns. Among these concerns is the assumption that the Soviet Union will continue to move toward democracy and demilitarization. The events we are witnessing in the Soviet Union today lead me to conclude that we were too optimistic on what President Gorbachev could accomplish. During the past months, we have witnessed a resurgence of the Soviet military's influence in internal political affairs, and the increasing demands of the radical right. Most disconcerting, however, are the problems of Soviet compliance with the Conventional Forces in Europe Treaty, and the delay in reaching an agreement on the strategic arms reduction talks.

Mr. Chairman, this Nation has historically relied on a strong nuclear deterrence. I am concerned that this new strategy will place this reliance at risk. Its strategic force structure assumes continued progress in arms control which, as I indicated earlier, may not be the case.

As we halt production of the "Peacekeeper" missile, the Soviet Union continues to modernize its strategic nuclear forces.

While we conduct research on mobile missiles, the Soviet Union has two operational mobile missile systems which will likely comprise two-thirds of the total ICBM launchers in the future.

While we are at a standstill in the production of nuclear material, the Soviet Union continues to exploit their capabilities.

While we have not made a nuclear weapon in nearly 2 years, the Soviets continue to modernize their stockpile.

Mr. Chairman, our strategic forces must remain the focus of our national deterrence. We must continue a robust modernization program to ensure we can and will maintain the peace in the next 40 years, just as it did during the past 40 years.

As the ranking member of the Strategic Forces and Nuclear Deterrence Subcommittee, I urge this committee to look closely at this new military strategy as it relates to our strategic forces capabilities. We cannot afford to let our most capable deterrent force to become a victim of benign neglect.

Thank you Mr. Chairman.

Chairman **Nunn**. Thank you very much, Senator Thurmond. I just have a few questions remaining.

On the SDI question, Admiral Jeremiah, in his State of the Union, President Bush announced that he had directed that SDI be refocused on "providing protection from limited ballistic missile strikes, whatever their source."

How much in the way of guidance have the Joint Chiefs gotten from the White House about what this refocusing means from the President's point of view? Have you gotten new guidance from the White House as to what the President meant by that State of the Union?

Admiral **Jeremiah**. Not specifically. We have looked hard at the limited capability to determine what does that mean, as we have looked at the specific requirements. I think, in general, that we are talking about numbers less than 200, say. But we have not put any very hard numbers against that limited requirement.

What we are looking at is Third World and accidental kinds of release.

Chairman **Nunn**. Are you taking another look at your requirements in light of that Presidential directive?

Admiral **Jeremiah**. We did look at the directives and we looked at it in the context of the Phase I requirements, which the Chiefs specified several years ago. We felt that, in the context of threats against the United States, the Phase I requirement was a correct statement of our needs, in terms of strategic defense.

Chairman **Nunn**. You have reaffirmed that?

Admiral **Jeremiah**. That's correct. It includes a limited attack by a Third World nation or, as we are now postulating, an accidental launch of a limited number of missiles.

Chairman **Nunn**. There is no doubt if you have Phase I—what is your definition of that? Is it half the SS-18 force? Is that still the definition, roughly?

Admiral **Jeremiah**. Yes, sir.

Chairman **Nunn**. How many warheads would that be?

Admiral **Jeremiah**. It's sizable; in the thousands.

Chairman **Nunn**. Well, there is no doubt if you can knock down thousands, you can knock down 10, 20, 30 or 40, right?

Admiral **Jeremiah**. That's correct.

Chairman **Nunn**. Well, that's always been the case.

Admiral **Jeremiah**. The requirement is stated in that context and the context also of having the capability to deal with the smaller numbers. So you could argue that we are moving incrementally through the satisfaction of the Phase I.

Chairman **Nunn**. I guess that gets to my next question. Does that mean that you are putting the top priority on getting the limited capability, rather than the top priority on knocking down half the SS-18s?

Admiral **Jeremiah**. We have not prioritized between them.

Chairman **Nunn**. So there has been no change since the President's change, right?

Admiral **Jeremiah**. That's correct.

Chairman **Nunn**. So what the President said hasn't had any effect on the Chiefs, in effect?

Admiral **Jeremiah**. We listened to what he said, we looked at what our requirements were, and we felt that our requirement was consistent with his statement.

Mr. **Wolfowitz**. I think it hasn't changed the requirements statement, Senator. But I believe what it has changed is the way in which SDIO has allocated its budgetary resources, which priorities it has had in research and development. But the requirements are basically all there.

Chairman **Nunn**. Would you say, then, that the SDIO would be the place where they would reflect this changed Presidential priority?

Mr. **Wolfowitz**. That's my understanding. Yes, Senator.

Chairman **Nunn**. And that they would be shifting more money to limited scenarios as a priority, as opposed to Phase I, or within Phase I?

Mr. **Wolfowitz**. Within a program that aims to get you to Phase I. In other words, SDIO is aiming to achieve the full range of requirements the JCS has laid out, but in sort of chronological priority and where the development emphasis is placed, I think it has shifted in that sense.

Chairman **Nunn**. Does that mean we get to Phase I later than we would have before the President made his statement?

Mr. **Wolfowitz**. I'd want to check that. It's my understanding, but I'd want to check that.

[The information follows:]

On the basis of our current planning assumptions, the President has decided to give priority to protecting the United States, our forward deployed forces and our friends and allies against limited ballistic missile strikes, whatever their source. Another decision, taken in the future, would be necessary to direct the SDI program to satisfy the Phase I requirement to deter a massive Soviet strike on the United States. Of course, any such decision would be reflected in our budgetary submission to the Congress.

In keeping with the immediacy of the threat posed by the proliferation of ballistic missiles and weapons of mass destruction, Secretary Cheney has directed that improved theater defense capabilities be developed for fielding by the mid-1990s. Consistent with the President's direction for the SDI program, the budget and program plan for SDIO is designed to permit deployment options for defending the United States and further improving theater defense capabilities by the late 1990s to complete the GPALS concept.

Admiral JEREMIAH. I think that's fair. Yes.

Chairman NUNN. It seems to me the President was intending to say something here or he wouldn't have put it in the State of the Union. Do you agree with that?

Mr. WOLFOWITZ. I think you just have the wrong witnesses here, Senator. Yes, he absolutely did. In fact, there is a rather carefully developed program that Ambassador Cooper has presented to the President, restructuring the whole SDIO budget and program with that emphasis in mind.

Chairman NUNN. Admiral Jeremiah, the Chiefs didn't take the Presidential statement as anything that would require the Chiefs to revisit your own requirements, then?

Admiral JEREMIAH. We looked at our requirements and felt that, for a requirements statement, our statement of requirements encompassed the actions that the President was taking. I think it is correct, as Paul said, that we are looking at a "how do you implement achieving that requirement."

Chairman NUNN. Are you taking a look at what the President meant and looking more intensively at the requirements for a limited system?

Admiral JEREMIAH. We looked. We did do that. We have also, as I indicated earlier, looked particularly at the theater aspects of this, at theater anti-ballistic missile defense.

Chairman NUNN. I tried for about 5 years to get the Chiefs to look at the requirements for a limited system and basically they keep saying there is no requirement for a limited system. Are you going to tell the President the same thing?

Admiral JEREMIAH. No, I don't think so. I think we say in there that there is a utility in a limited system.

Chairman NUNN. You do?

Admiral JEREMIAH. Yes, sir.

Chairman NUNN. When did you say that?

Admiral JEREMIAH. I think it's always been in the Phase I document. I'll check that for the record, if you'd like.

Chairman NUNN. Would you check that for the record and tell us exactly what Phase I provides, and whether you have had a priority for a limited system or whether it's simply part of Phase I?

Admiral JEREMIAH. Sure.

[The information follows:]

REQUIREMENTS FOR LIMITED SDI SYSTEM

The requirement for protection against a limited attack has always been in the Phase I requirements document. [Deleted]. Further, review of the Phase I document reveals that some of the requirements stated therein have specific applicability to a

GPALS system, though there is no mention of a specific system or solution to satisfy Phase I and/or limited attack protection requirements. The requirements document does not prioritize procurement of a full or limited attack defense capability. USCINCSPACE has provided further requirements specificity in an Operational Requirements Document currently in the validation cycle. On the low end of the spectrum, the requirements for theater/tactical missile defense (T/TMD) are being updated based on recent input from the CINCs. Upon validation of the USCINCSPACE requirements document and the updated T/TMD requirements, a full set of operational requirements for defending against missiles of all ranges will exist.

Chairman **Nunn**. Everybody knows that when you get Phase I and can knock down half the Soviet SS–18s, theoretically if you achieve that capability, you will be able to knock down less numbers. The question is priorities.

Admiral **Jeremiah**. Yes.

Chairman **Nunn**. The question is whether we are going to wait until we get to Phase I, which I don't think anybody projects—you don't project that happening in the 1990s, do you?

Admiral **Jeremiah**. But I think that is what the President was addressing in his priority of effort. That's a little different than requirement.

Chairman **Nunn**. Okay. Have you changed your priorities or do you feel like it is up to the Chiefs to change your priorities?

Admiral **Jeremiah**. I think in this case that is a Secretarial decision, how to meet the requirement to deal with an anti-ballistic missile defense system, which part of that apple they are going to bite at first.

Chairman **Nunn**. Which one you are going to bite at first. So, the Chiefs are going to stay out of that? You are not going to be players in that?

Admiral **Jeremiah**. We stated the requirement. We will leave it to the people who have to acquire things to do the acquisition.

Chairman **Nunn**. So, are we going to have a basic chain of command from the President directly to the SDIO and the Chiefs are not going to be a player in here at all? It seems to me that the Chiefs have to be players in this. You obviously have not given a high priority within your requirements to a limited system. Would you agree with that? [Pause]

Let me get him to answer it, Mr. Secretary. [Laughter.]

Chairman **Nunn**. They are not letting you in on the meetings yet, are they, Mr. Secretary? So let me get the Admiral to answer that one.

My question is really simple. Have the Chiefs given a high priority to a limited protection system?

Admiral **Jeremiah**. The Chiefs have given a priority to Phase I, which encompasses the capability of dealing with a limited system.

Chairman **Nunn**. But you are willing to wait until we get Phase I to be able to have a limited system?

Admiral **Jeremiah**. I am willing to wait until they get a limited system. We have to wait, perhaps, to get a limited system. We may have to get a limited system before we can get to Phase I.

Chairman **Nunn**. Yes, exactly. Exactly. But the Chiefs never have said that was the order of priority for your requirements, have they?

Admiral **Jeremiah**. I don't believe we have.

Chairman **NUNN**. So you really have not put very much emphasis on a limited system?

Admiral **JEREMIAH**. Nor have we not put emphasis on a limited system. We have said that this is a requirement and I do not believe that we have differentiated between——

Chairman **NUNN**. But if the Chiefs felt we needed a limited system in the 1990s, you would certainly know how to state that without saying basically we want a Phase I system and out of that it will be great because we'll get a limited system, too, even though it may not come until 2005.

I have watched the Chiefs over the years, and my view of it is that you have always been able to express yourself pretty well if you felt that a limited system was a priority. So I think I can fairly conclude that a limited protection system has not been a priority of the Joint Chiefs.

Would you disagree with that?

Admiral **JEREMIAH**. I think that would probably not be wrong historically. [Laughter.]

Chairman **NUNN**. Now, Mr. Secretary, do you want to bat cleanup? [Laughter.]

Mr. **WOLFOWITZ**. I just wanted to stress that Admiral Jeremiah has to speak for the role of the Chiefs as a body. I know that General Powell has been part of those briefings to the President and the meetings with the Secretary where the SDIO program was reshaped. I think the question of priorities, at least as I see it, is one that gets decided there, in how you allocate the budgetary resources.

Chairman **NUNN**. Admiral, on another point, during your confirmation hearing, you committed very clearly to review the requirements for all of the planned weapon systems, and I'm sure you meant major systems, as nobody can review all of them, I guess. But, based on the changes in the threat and the strategy, have you undertaken that review, and how is that proceeding?

Admiral **JEREMIAH**. Yes, we have.

Let me explain what that really means. We have gone through all of the ACAT I programs in the JROC, and looked at them in the context of the world, as we see it changing, to try to understand whether there are substantive changes in those systems. That was sort of a top to bottom review.

We have also gone back and reviewed explicit systems in greater depth as we go through the development of these systems from the MNS, the Mission Needs Statement, through the Acquisition Milestones.

In each of those steps, the JROC looks at the operational requirement to try to determine whether those requirements are correct.

Several things come out of this. One is in my judgment, we need to look much farther out into the future, look at future technology, and back that into our requirements statements, and look at future strategy. We have such a study underway now. It goes out a quarter century or more into the future because of the long lead-time that is involved in developing things.

Second, we have looked at the requirements definitions, and in many cases I find them too explicit. They are written to contract kinds of definitions in some cases. From a military requirements capability, we want to avoid telegraphing the answer to the requirements statement so that there is a full evaluation of all of the alternative ways of solving the problem.

Third, we put a very hard press on certain systems that were specifically identified with war in the central front of Europe. JSTARS comes to mind as an example.

I know this committee is familiar with the system. In many ways it was lifted up as the kind of thing that was no longer necessary because we were no longer able to look across an inter-German border. So what is the utility of that kind of system in the central front of Europe anymore?

We pressed very hard on this to determine (a) the requirements in terms of theaters outside of Europe, and (b) the quantities required.

Frankly, there was a lot of enthusiasm for perhaps whittling that down to a smaller number.

We looked at it and said there is a capability there that needs to be retained, even though it is not in the European scenario necessarily, and then, shortly after that, in fact, Desert Shield came along, and we employed, as you know, JSTARS to Desert Shield, and it performed very, very well, in a quite different kind of scenario, and was very useful to us.

So, in that context, we saw some different kinds of things.

Some systems that were clearly dependent upon cooperation in a central front of Europe, an inter-German border kind of scenario, have come out. But more often, what we have found is the numbers of things are larger than the current strategy requires. Technology still seems to need to be there, and we want to stay ahead of technology in our defense programs.

But in some cases, the numbers of things are not required. I think that leads us to another conclusion, as we look at the whole acquisition process, and that is that we are going to have to think really hard about the kinds of programs we bring up here.

We need to squelch our enthusiasm for trying to figure out how to get the greatest number of widgets to bring to the Hill so that the unit cost is low and so that we can attract lots of contractors in a competitive environment.

What that does is cause them to tool up. It creates a sticker shock as we get to more realistic numbers, as the program develops and moves downstream. What we are now looking at very hard is trying to get reasonable order quantities at the front end of the process so that when we bring a program up here, it has—and you're not going to see this instantaneously—but we want to move in that direction—I've talked to Mr. Yockey on this subject as well—so that we bring up realistic programs.

Prices are going to show up on a unit cost basis higher. But I think, in the long-term, the total cost is going to be more realistic. Also, the contractors and industry are going to have a fair shake in knowing what they are trying to bid against.

Chairman NUNN. We're trying to avoid the chronic pattern that we have gotten into of having buy-ins at low and unrealistic rates that end up in over-runs, lawsuits, time delays, and constant problems, right?

Admiral Jeremiah. I guess the last thing I would say is, as we continue to examine the requirements processes, we have looked harder and harder at the integration of the system. There are an awful lot of "eaches" out there. What you need to look at is if you are going to buy this particular platform and that particular weapon and these other kinds of supplementary defensive systems, do you need to buy all of that capability in each of those pieces, or do you end up with a totality of a system that has more, I don't want to say "gold-plated," but it makes sense on each individual item, but when you put it all together and say here is a weapon system in a larger sense, you really have more there than perhaps you need or want. There are places where we could eliminate that kind of redundancy.

Chairman Nunn. Let me ask one other question, and then, unless you all have something else, we will close this up.

General Powell described four basic force packages and then four supporting capabilities. You went through those, Admiral, in your statement. They consist of Strategic forces, Atlantic forces, Pacific forces, Contingency forces, and then, on the supporting side, transportation, space, reconstitution, and research and development.

I understand that at this stage, this is a conceptual outline. But eventually, it seems to me that it has to have a very significant effect on the Unified Command Plan.

Do you agree that will have an effect as we move forward?

Admiral Jeremiah. It may. But I think you will have to put a fairly significant time horizon on that. If you, for instance, put CENTCOM, the European Command, and the Atlantic Command together, you've got the potential for—let me first say one of the reasons you want to do this potentially is to reduce the numbers of staffs and overhead. You may very well end up, in order to accommodate all of the different political entities in that kind of structure that need to be serviced, with equal or greater numbers of staffs if you are not careful.

So the Chiefs are looking at it pretty carefully. We think that there are some kinds of efficiencies that are possible, perhaps even below the unified commands, and in some of the subordinate commands in the components or in the subunified command structure underneath them.

The Chiefs started out on this issue in the summer and, frankly, we deferred it because of Desert Storm and Desert Shield. I think General Powell would like to get back into it in the near-term. But whether we bite that whole apple right now, I don't think the situation allows us to completely parallel this set of force packages with the command structure that goes with it.

Chairman Nunn. I think you just touched on one of the things that I have been apprehensive about. I don't know how many unified commands there ought to be. But I think pretty clearly, under Goldwater-Nichols—and I believe that was pretty well confirmed as the right concept in Operation Desert Storm—we truly did have a uniform command in the name of Schwarzkopf, and so forth.

If you get things so broad that you are going to end up having "sub-subs," a Pacific Command and then three under that, you are going to end up, as you mentioned, proliferating staffs and you may lose the concept of unified command under that. That is the danger.

Admiral **Jeremiah**. We have a very nice, short communications link right now, and I guarantee you that it gets harder the more loops you go through.

I was involved in some earlier operations in the Mediterranean peripherally, and it is very handy to be able to listen to the correct word and then go and execute that statement of objectives.

That is what we are really concerned about, not getting too much layering in here because it looks tidy at the top. But it can get very messy lower down.

Chairman **Nunn**. Would it be fair to say, then, that this Atlantic, Pacific, Contingency and so forth is still very conceptual and that you are not going to be rushing into implementing that?

Admiral **Jeremiah**. I think what I would like to characterize them as our force packages that are understandable and relate to the kinds of requirements we need in those geographical theaters.

Chairman **Nunn**. In other words, more budgetary than command oriented?

Admiral **Jeremiah**. Yes, sir.

Chairman **Nunn**. You may end up with that as more of a budgetary approach without having much effect on the unified commands, at least in the near-term.

Admiral **Jeremiah**. Yes, sir. But it is a good way of explaining the kinds of capability you need because they differ in the way we would expect to employ forces, as between the contingency command, which is fundamentally a light force, and the contingency package, which is fundamentally light force, and the Atlantic forces, which were basically heavy forces augmented by mobilization, and with mobility and lift requirements to support them.

Chairman **Nunn**. Thank you very much. Paul, do you have anything else today?

Mr. **Wolfowitz**. No, I don't, Senator.

Chairman **Nunn**. Thank you both. Admiral, Mr. Secretary, thank you.

Again, I repeat that I am glad you both are in your slots. I think you have played a tremendous role and we are grateful to you.

Mr. **Wolfowitz**. Thank you, Mr. Chairman.

Admiral **Jeremiah**. Thank you, sir.

[Questions for the record with answers supplied follow:]

Questions Submitted by Senator Sam Nunn

SOVIET CONSERVATIVE RESURGENCE

Senator **Nunn**. Secretary Wolfowitz, in recent weeks and months we have seen reports of a resurgence of conservative forces inside the Soviet Union. At the same time we understand that the Soviet Union continues on schedule to remove forces from East Europe. Is the Soviet Union removing its forces from East Europe generally on schedule?

Mr. **Wolfowitz**. Soviet forces from Czechoslovakia and Hungary appear to be withdrawing on schedule, which requires that the withdrawal be completed by June 30. Soviet forces in Germany are required to be withdrawn by the end of 1994, and the withdrawal is only now beginning. Soviet forces have begun withdrawing from Poland, although as of April 26, the U.S.S.R. and Poland have not reached agreement on a timetable for completing the withdrawal.

Senator **NUNN**. Have you seen any change in Soviet activity on withdrawing from East Europe during this period when conservative forces have grown stronger in the Soviet Union?

Mr. **WOLFOWITZ**. No, we have not.

Senator **NUNN**. Do we believe the Soviet Union will continue to withdraw forces from East Europe?

Mr. **WOLFOWITZ**. All indications at this time are that the Soviets will withdraw their forces by the deadlines to which they have committed themselves.

Senator **NUNN**. If the CFE Treaty dispute is not resolved, do you expect the Soviet Union to halt withdrawals from East Europe?

Mr. **WOLFOWITZ**. No. The CFE Treaty is an agreement among 22 states to limit military equipment in the Atlantic-to-Urals region, whereas the Soviet commitments to withdraw from Eastern Europe stem from bilateral agreements with the states concerned. We expect the Soviet Union to comply with its obligations.

NEW NATO STRATEGY

Senator **NUNN**. Secretary Wolfowitz, I understand that we and our NATO partners are conducting a comprehensive review of all alliance strategy. Can you summarize this new alliance strategy?

Mr. **WOLFOWITZ**. It is still being drafted but will reflect the London Summit Declaration which called for a new political and military alliance strategy intended to adapt NATO to the political transformation of Eastern and Central Europe, the end of the artificial division of Europe and adversarial relationships of the Cold War, German unification and the prospect of significant reductions of armaments, both unilateral and negotiated. It places greater emphasis on reduced force levels, and changed force deployments. It fosters the increased use of multinational formations that are highly mobile and flexible and foresees a more streamlined command structure. Nuclear forces will continue to fulfill an essential role, albeit at reduced levels. The process will eventually result in a comprehensive new NATO strategy which will enable the alliance to respond to the security challenges of a new security environment.

Senator **NUNN**. Is the strategy contingent upon implementation of the CFE Treaty? Is the strategy contingent upon the withdrawal of Soviet forces from Eastern Europe?

Mr. **WOLFOWITZ**. It is likely that there will be a comprehensive military strategy that has been developed in contemplation of complete Soviet withdrawal from Eastern Europe and implementation of the CFE agreement. At the same time, the pace of its implementation will be guided by progress in these areas.

Senator **NUNN**. Does the new strategy envision NATO forces being used "out of theater?"

Mr. **WOLFOWITZ**. NATO's new strategy would not in principle preclude NATO from responding to any security challenges against NATO. The creation of multinational corps in combination with a Rapid Reaction Force will provide NATO with the capability to pursue a full range of operations.

Senator **NUNN**. Has Operation Desert Storm changed the traditional NATO allergy to "out of theater" operations?

Mr. **WOLFOWITZ**. Desert Storm, while clearly not simply a NATO project, highlighted the value of NATO installations and operating procedures, as well as political/military consultations. The alliance effectively protected its own territory, i.e., Turkey and the Southern Flank, while supporting the coalition against Iraq through airlift capabilities, military, supplies, and civil emergency materiel. There is no doubt that as a result of contributions to Desert Storm, members are very much aware of NATO's relevance to non-traditional threats.

MOBILITY PROGRAMS

Senator **NUNN**. Admiral Jeremiah, in your statement you discuss some of the lessons learned from Operation Desert Storm. You state, "clearly, one lesson learned is that we must improve our strategic mobility, particularly for rapid sea movement of heavy forces and supplies."

In recent years Congress has appropriated some $1.3 billion for sealift modernization. When is the Department of Defense going to proceed with a sealift program?

Admiral **JEREMIAH**. Section 909 of the National Defense Authorization Act for Fiscal Year 1991 requires the Department of Defense to conduct a study to determine future mobility requirements for the Armed Forces and to develop an integrated plan to meet those requirements. Section 1424 further requires the Secretary of the Navy to submit a report to Congress describing a sealift program. A document titled "Mobility Requirements Study (Interim Response)" was just approved by the Deputy Secretary of Defense and provided to you within the past few days. The emerging results of our analysis show us that there is a need for additional large, militarily useful, medium sustained speed, multi-purpose RO/RO ships with prepositioning potential. In fact, this Interim Report specifically recommends using appropriated sealift funds to procure ships with these characteristics. However, we want to stress that these are interim conclusions and that there is more to proceeding with a comprehensive sealift program than merely recommending the purchase of a certain type of vessel. The U.S. Navy is using the results of the Interim Report as the basis for developing a comprehensive sealift acquisition plan. Further, the Secretary of the Navy has directed the Chief of Naval Operations and the Assistant Secretary of the Navy for Research, Development, and Acquisition to proceed with the development of an Operational Requirements Document and to begin a phased acquisition process leading to design and construction and/or purchase of appropriate ships. Thus, a sealift acquisition program is in progress, and we will ensure that this plan remains consistent with the final integrated mobility plan being developed by the Mobility Requirements Study.

UNDERLYING PLANNING ASSUMPTIONS IN FYDP

Senator NUNN. Admiral Jeremiah, the 1991 Joint Military Net Assessment outlines a series of scenarios that "represent the types of situations we believe we must be prepared to face in the future." The document goes on, however, to state, "these scenarios were not the basis for the programs that provided our current capabilities; their details remain under study, and their implications are only now being incorporated into the FYDP. Thus, this assessment represents a first report of the transition from planning and programming principally for global war with the Soviet Union to planning and programming for the regional situations we expect to face in the 1990s." Does this mean that the force structure changes and the programs outlined in the budget request are provisional and subject to change?

Admiral JEREMIAH. The force structure changes and the programs outlined in the budgets are subject to refinement and modification. The FYDP reflects forces necessary to meet the types of scenarios we think are most likely, but it is based on underlying assumptions, particularly with respect to continued reform in the Soviet Union. We will carefully watch developments in the Soviet Union and adapt our programs as necessary. We may also make some adjustments as a result of lessons learned in Desert Shield and Desert Storm. By and large, however, we do not anticipate major changes to the force structure and programs outlined in the budget.

Senator NUNN. The affordability of some programs—such as the Air Force's Advanced Tactical Fighter or the Navy's SSN-21 submarine—could depend on knowing how large a force we are going to have and the kind of threat we face. Why should Congress sign up to full scale development of new weapons, for example, if the FYDP we have doesn't reflect the kind of scenarios you think are most likely in the future?

Admiral JEREMIAH. Our current capabilities are largely based on scenarios used in the past. However, the world has changed. Thus, our scenarios have changed. These new scenarios were used to develop our current FYDP. Though there is a focus on regional threats, the scenarios also address a reduced, but continuing, Soviet threat. Many weapons systems currently in use or in development are applicable to the new scenarios. Those that are have been included in the FYDP. Our FYDP was structured within fiscal constraints to meet the threats we believe we will face in the future.

RESERVE CALL-UP AUTHORITY

Senator NUNN. Admiral Jeremiah, Operation Desert Shield/Desert Storm involved the use for the first time of the reserve call-up authority of up to 200,000 reservists or guardsmen provided under Section 673b of Title 10 of the United States Code.

Section 673b provides that the President may order to active duty, other than during war or national emergency, members of the Selected Reserve for 90 days and then extend them for another 90 days to augment Active forces for any operational mission.

Was this authority adequate for you to activate the Selected Reserve according to your order of force employment?

Admiral JEREMIAH. In my opinion, the authority was adequate. It allowed the President, during the initial phases of our response to Iraqi aggression, to call-up a maximum number of 200,000 Selected Reservists for 90 days, with the ability to extend them for an additional 90 days, if necessary.

Senator Nunn. Are there any changes that you would recommend to this authority?

Admiral Jeremiah. In my view, the authority is adequate and provides sufficient flexibility to respond to various operational requirements. However, an improvement would be to establish a special category of SELRES comprised of recently released, highly trained soldiers who are now transferred to the IRR upon separation from active duty unless they elect to, or are under an obligation to enter the Selected Reserve.

Senator Nunn. What constrained the President from exercising his broader authority under Section 673 of Title 10 of the United States Code to activate under declaration of a national emergency up to 1 million Ready Reservists (includes the Selected Reserve) for up to 24 months earlier than he did?

Admiral Jeremiah. There were no legal constraints on the President. Gradual expansion of the Reserve component force was appropriate and supportive of operational requirements. The duration of the conflict and the need to obtain certain Combat Service Support capabilities determined when the decisions were made and how many Reservists were called up.

ALLIANCES

Senator Nunn. Secretary Wolfowitz and Admiral Jeremiah, the Joint Military Net Assessment reflects an unfavorable trend in alliances and states, "traditional military alliances most likely will wane." In his prepared statement of February 7, 1991, General Powell stated, and I quote, "in a future of declining defense budgets and less forward presence, we increasingly will rely on collective security arrangements to protect and further our and our allies' global interests."

Taken together, this means that the very arrangements we intend to rely on will not be available.

Can either or both of you shed some light on this apparent contradiction?

Admiral Jeremiah. I do not see these two statements as contradictory.

The statement quoted from the Joint Military Net Assessment is essentially true, in that we will see a waning of some prominent traditional military manifestations of our alliance relationships—most obviously in the level of our forward-deployed forces. For example, in the London Declaration of July 6, 1990, the North Atlantic Council acknowledged, "We reaffirm that security and stability do not lie solely in the military dimension, and we intend to enhance the political component of our alliance as provided for by Article 2 of our Treaty." This indicates that the traditionally military aspects of our alliances will become less important, relative to the political and economic aspects, in the years to come. Similarly in East Asia and the Pacific, the primary component of the military aspect of our security relationships has been our forward-deployed forces in the region. The security situation there now permits a careful, measured adjustment in that military presence. This by no means indicates a diminution of our political commitment to our alliance relationships and to regional security, however. On the contrary, we would expect that the political consultative aspects of those relationships will, if anything, continue to grow closer in the future.

As General Powell emphasized in his statement, collective security arrangements will continue to be important. These will certainly include our traditional formal alliances, but also may increasingly involve ad hoc coalitions. The coalition of forces assembled by the President for Operations Desert Shield and Desert Storm is an example of this new type of collective security relationship.

As our traditional focus on the prospects of global conflict continue to wane, we are increasingly concerned about the possibility of regional instabilities (like the Iraqi invasion of Kuwait) that may demand a military response. We may find it increasingly necessary to build coalitions and collective security arrangements, in response to emerging crises, where formal alliances do not exist. General Powell's statement reaffirms our intent to respond to threats and instabilities of any form in a collective manner; we cannot be the sole guarantor of peace and stability around the world, and we intend to seek the assistance of interested and affected parties as appropriate, should the need arise.

CFE AND U.S. TROOP STRENGTH IN EUROPE

Senator Nunn. Secretary Wolfowitz, a press report on Tuesday indicated that the Department of Defense has decided to reduce U.S. troop strength in Europe to a level of 150,000 by 1995, which is well below the 225,000 "floor" the administration has talked about on previous occasions. Is this report accurate and, if so, to what extent do these reductions depend on ratification and implementation of CFE?

Mr. WOLFOWITZ. As General Galvin noted in his testimony on March 6, 1991 the administration has a force structure plan for the future of forward deployed forces in Europe. By 1995, U.S. forces will consist of one Army Corps of two divisions, three plus tactical fighter wing equivalents, and a carrier battle group and a marine amphibious element. In addition, there will be forces for air defense, long range communication, intelligence and reconnaissance, logistics, and NATO support. The precise size of our troop strength remains to be determined. The key factor is the need to ensure that our forward deployed force is credible both militarily and politically. It must have real military capabilities even before reinforcements arrive and be large enough to provide a clear expression to both allies and potential adversaries of our firm commitment to the defense of Europe. While we anticipate CFE Treaty implementation, the future force structure plan ensures adequate force structure and flexibility to maintain deterrence.

EUROPEAN EFFORTS TO ACHIEVE DEFENSE UNITY

Senator NUNN. Secretary Wolfowitz, last month the State Department sent a long cable, which I understand has been coordinated at the Cabinet level with other agencies, to the 11 members of the European Community which are also members of NATO. The demarche reportedly warned the EC members that none of the security-oriented initiatives they are considering, including placing a revitalized Western European Union under EC auspices, should weaken NATO or undermine its current command arrangements.

Can you elaborate on what prompted this warning: what steps have our allies taken or what steps did you think they were about to take that would threaten NATO?

Mr. WOLFOWITZ. First of all, we would not characterize this demarche as a warning. The United States has consistently supported the process of European integration. As European discussions, particularly within the EC framework, began to focus on the political, security and defense dimensions of European integration, a number of our allies approach us for our views. We have made it clear that we have no intention of delaying or blocking European integration, but that if asked, we feel it important to clearly express U.S. perspectives on this process. In particular, our interest regarding the demarche was to convey our view that European security processes should be compatible with an effective NATO alliance and with transatlantic security links.

Senator NUNN. If the United States undercut allied efforts to build a genuine "European pillar" within NATO, do you think there is a chance that European support for a strong defense posture could be hurt—which could in turn have the unintended effect of weakening NATO?

Mr. WOLFOWITZ. The United States fully supports a European pillar within NATO; in fact, this is the entire focus of our argument. There is a good chance that if Europeans perceived that the United States was opposed to their efforts to build a stronger "European pillar" it would likely weaken the alliance. The United States however, has consistently stated that we welcome allied efforts to develop a more distinct European security identity as a means of strengthening European responsibilities within the alliance. Our concern now rests with the modalities of specific proposals being considered by Europeans. Thus we are working closely with our allies to develop a more distinct European security identity which supports our mutual security interests and strengthens the transatlantic link.

Senator NUNN. Can you submit for the record, under whatever classification may be required, a copy of the cable Acting Secretary Bartholomew sent our 11 allies.

Mr. WOLFOWITZ. The February demarche originated in the State Department. Appropriate release procedures for the cable require that the State Department be the releasing agent. We will be happy to work with you and the State Department to facilitate this procedure.

TOTAL FORCE POLICY—RESERVE ROLE

Senator NUNN. Secretary Wolfowitz, DOD's recent report on the Total Force Policy indicates different roles in the future for our Active and Reserve forces under your Atlantic Force, Pacific Force, Contingency Force and Strategic Force concept than is the case today.

The report suggests that for contingencies of less than 30 days, only Active forces would be used. No Reserve components would be activated, even for combat support or combat service support functions.

Do the National Guard and Reserve components lose their existing early deploying combat role under this future year defense plan?

Are certain combat support and combat service support missions that the Guard and Reserve components now perform being transferred to the Active components?

Wouldn't this concept essentially relegate the National Guard and Reserve to a reinforcing, reconstituting back-up role?

Mr. WOLFOWITZ. The Reserve components have long served indispensible roles, including roles early in contingencies, under our Total Force Policy. That will remain the case under the new strategy and defense program. Yet there have always been types of contingencies for which we envisioned no early Reserve combat role, and now we must reexamine our policy in light of the recent changes in threat and strategy, and the lessons of Operation Desert Shield/Desert Storm.

Our new threat assessments and strategy focus on short-warning regional threats that require rapid availability of highly proficient forces. Therefore, as Secretary Cheney testified, a U.S. response to such a threat would use mostly Active forces, and Reserves would initially provide airlift and other selected support, with their support roles increasing in larger contingencies, and combat roles mainly in particularly large, prolonged, or concurrent deployments.

This vision is quite in keeping with our actual conduct of Operation Desert Shield. From that operation we also observed that the Reserve component combat brigades we activated did indeed need additional training after their callup, and that we would not have been prudent to commit them to a combat situation without it—a conclusion that I understand you voiced yourself, Mr. Chairman, after visiting with some of those reservists during their training. This gives us reason to reassess the early role of that sort of combat unit. At the same time, significant Reserve combat forces from several services were committed in Desert Storm—and this too was in keeping with the Reserve roles envisioned above.

As we evolve the force to reflect these developments and lessons, we must consider our ability to deploy an initial increment of forces without Reserve callup. But even a rather limited force would almost surely require key Reserve contributions, which we could expect to gain on a volunteer basis. The Guard and Reserve will certainly remain indispensible in a very wide range of contingencies.

SDI/TMDI COMPLIANCE WITH ABM TREATY

Senator NUNN. Is the 1985 Presidential directive requiring that the SDI program be conducted according to the traditional interpretation of the ABM Treaty still in effect?

Mr. WOLFOWITZ. All SDI tests and experiments which have been evaluated for ABM Treaty compliance are consistent with the so-called narrow interpretation of the ABM Treaty. We are paying a price for this in terms of cost and technical results. As we have agreed with the Congress, when this cost becomes unacceptable, we will come to the Congress and seek your approval through the normal budgetary process. The administration continues to believe that the ABM Treaty permits the development and testing of ABM systems, or the components of such systems, that are based on "other physical principles," in any basing mode.

Senator NUNN. If so, does this directive also apply to the new Theater Missile Defense Initiative (TMDI), which has been placed under the overall direction of the SDI Organization (SDIO)?

Mr. WOLFOWITZ. The Theater Missile Defense Initiative is being pursued under the same general compliance policy direction as that which applies to SDI.

Senator NUNN. Do any SDI or TMDI experiments now planned for fiscal year 1992 and for which compliance review has been completed entail development or testing that would conflict with the traditional interpretation?

Mr. WOLFOWITZ. No.

Senator NUNN. Are any SDI or TMDI experiments being considered for conduct during fiscal year 1992 for which compliance review has not been completed?

Mr. WOLFOWITZ. Tests are planned in fiscal year 1992 which are not yet sufficiently defined for compliance review.

Senator NUNN. If so, do any of these yet to be finalized experiments involve configuration options that could entail development or testing during fiscal year 1992 inconsistent with the traditional interpretation?

Mr. WOLFOWITZ. All SDI tests and experiments planned to take place during fiscal year 1992 which are yet to be finalized are planned to be consistent with the so-called narrow interpretation of the ABM Treaty. We are paying a price for this in terms of cost and technical results. As we have agreed with the Congress, when this price becomes unacceptable, we will come to the Congress and seek your approval through the normal budgetary process. The administration continues to believe that the ABM Treaty permits the development and testing of ABM systems based on "other physical principles," and the components of such systems, in any basing mode.

We are planning to develop and deploy theater and tactical missile defense systems to counter the projected threat to our forces abroad and to our allies. Although the objective of the ABM Treaty is to limit defenses against strategic ballistic missiles, there may be conflicts between the treaty and the development and deployment of some of these theater and tactical missile defense systems. We are currently studying this issue.

Senator NUNN. If the compliance review should determine in any such cases that the experiment cannot be conducted within the traditional interpretation (or if the administration should direct the selection of a configuration option for that experiment that is incompatible with the traditional interpretation) would, as in years past, the administration pledge to consult with Congress and seek its approval in accordance with customary transfer and reprogramming procedures before obligating or expending any funds for the experiment?

Mr. WOLFOWITZ. If we conclude that it is necessary for programmatic reasons to go beyond the so-called traditional interpretation in any experiment, we would consult with the Congress and request approval through normal budgetary procedures to obligate and expend funds for the experiment.

Senator NUNN. Have any SDI or TMDI experiments been planned for fiscal years after fiscal year 1992 that entail development or testing that could not be conducted within the traditional interpretation and for which the administration has determined that long-lead acquisition of material or equipment uniquely required for these experiments must be accomplished in fiscal year 1992?

Mr. WOLFOWITZ. No. There are no SDI or TMDI tests currently planned to be carried out after fiscal year 1992 that would exceed the so-called traditional interpretation of the ABM Treaty and require funds to purchase long lead parts in fiscal year 1992 that would be uniquely required for tests that would exceed the so-called traditional interpretation of the ABM Treaty. Should our plans in this regard change, we would consult with the Congress and request your approval through normal budgetary procedures.

Senator NUNN. Are any yet to be finalized SDI or TMDI experiments now being considered for fiscal years after fiscal year 1992 that include configuration options for development and testing that could not be conducted within the traditional interpretation and which could require the long-lead acquisition in fiscal year 1992 of material or equipment uniquely required for such experiments?

Mr. WOLFOWITZ. All SDI tests and experiments planned to take place after fiscal year 1992 which are yet to be finalized and which could require the long lead acquisition in fiscal year 1992 of material or equipment uniquely required for tests that could not be conducted within the so-called narrow interpretation of the ABM Treaty, are planned to be consistent with that interpretation. We are paying a high price for this in terms of cost and technical results. As we have agreed with the Congress, when this price becomes unacceptable, we will come to the Congress and seek your approval through the normal budgetary process. The administration continues to believe that the ABM Treaty permits the development and testing of ABM systems based on "other physical principles," and the components of such systems, in any basing mode.

We are planning to develop and deploy theater and tactical missile defense systems to counter the projected threat to our forces abroad and to our allies. Although the objective of the ABM Treaty is to limit defenses against strategic ballistic missiles, there may be conflicts between the treaty and the development and deployment of some of these theater and tactical missile defense systems. We are currently studying this issue.

Senator NUNN. If, following compliance review and the finalization of these experiments, the administration should determine that long-lead purchases are required in fiscal year 1992 for such material or equipment, would the administration again, pledge to consult with the Congress and seek its approval in accordance with customary transfer and reprogramming procedures before obligating or expending funds for such purchases?

Mr. WOLFOWITZ. Should our plans for such experiments change, we would consult with the Congress and request your approval through normal budgetary procedures.

Senator NUNN. Does the administration agree that under both the traditional and so-called "broad" interpretations of the ABM Treaty, a space-based ABM interceptor missile based on physical principles generally understood in 1972 (i.e., a space-based ABM interceptor missile that is deemed to be a modern version of a "traditional"

ABM interceptor missile and not one based on "other physical principles" (OPP)) cannot be "tested in an ABM mode?"

Mr. **Wolfowitz**. The ABM Treaty (Article V in conjunction with Article II) prohibits testing in an ABM mode of traditional ABM interceptor missiles that are space-based and modernized versions of these.

Senator **Nunn**. Has the administration made any determination as to whether the space-based Brilliant Pebbles kinetic-kill missile will be considered to be based on "OPP" or, alternatively, to be a modern version of a "traditional" ABM interceptor missile?

Mr. **Wolfowitz**. The administration has not reached any determination as to whether an ABM system using the Brilliant Pebbles concept would be an ABM system based on other physical principles under the ABM Treaty.

Senator **Nunn**. If not, does the administration have any plan or timetable for doing so?

Mr. **Wolfowitz**. We will address this issue when it becomes necessary to do so for programmatic reasons.

Senator **Nunn**. Does the administration agree that under the "broad" interpretation, ABM systems and components based on OPP cannot be deployed, even if that system or component is configured in a fixed, land-based deployment mode?

Mr. **Wolfowitz**. ABM systems based on other physical principles and including components capable of substituting for ABM interceptor missiles, ABM launchers, or ABM radars are addressed only in Agreed Statement D of the ABM Treaty. That agreed statement provides an implicit ban on the deployment of such systems and applies irrespective of their basing mode.

Senator **Nunn**. Has the administration made any determination as to whether the Ground-Based Interceptor (GBI) or Exo-endoatmospheric Interceptor (E2I) fixed, land-based ABM interceptor missiles are modern versions of "traditional" ABM interceptor missiles or based on OPP?

Mr. **Wolfowitz**. The administration has not reached any determination as to whether an ABM system incorporating the GBI or E2I concept would be an ABM system based on other physical principles under the ABM Treaty.

Senator **Nunn**. If not, does the administration have any plans or timetable for doing so?

Mr. **Wolfowitz**. We will address this issue when it becomes necessary to do so for programmatic reasons.

[Whereupon, at 5:00 p.m., the committee adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEARS 1992 AND 1993

THURSDAY, APRIL 18, 1991

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

DEPARTMENT OF ENERGY NATIONAL SECURITY PROGRAMS

The committee met, pursuant to notice, at 9:03 a.m., in room SR-222, Russell Senate Office Building, Senator J. James Exon presiding.

Committee members present: Senators Nunn (Chairman of the Committee on Armed Services), Exon, Levin, Kennedy, Bingaman, Dixon, Glenn, Wirth, Warner, Thurmond, and Smith.

Committee staff members present: Arnold L. Punaro, staff director; Madelyn R. Creedon, counsel; and Lucia M. Chavez, research assistant.

Professional staff members present: William E. Hoehn, Jr., and Michael J. McCord.

Minority staff members present: Patrick A. Tucker, minority staff director and counsel; Romie L. Brownlee, deputy staff director for the minority; George W. Lauffer, and John E. Mansfield, professional staff members.

Staff assistants present: Mary J. Kampo, Cindy Pearson, and Mickie Jan Wise.

Committee members' assistants present: Andrew W. Johnson, assistant to Senator Exon; Kenneth N. Luongo, assistant to Senator Levin; William J. Lynn, assistant to Senator Kennedy; John P. Gerhart, assistant to Senator Bingaman; Michael D. Slater, assistant to Senator Glenn; Leon S. Fuerth, assistant to Senator Gore; Jefferson B. Seabright, assistant to Senator Wirth; Terence M. Lynch, assistant to Senator Shelby; James M. Bodner, assistant to Senator Cohen; Anthony Cordesman, assistant to Senator McCain; Samuel D. Adcock, assistant to Senator Lott; Eric H. Thoemmes, assistant to Senator Coats; Ross Lindholm, assistant to Senator Mack; and Thomas L. Lankford, assistant to Senator Smith.

OPENING STATEMENT OF SENATOR J. JAMES EXON, PRESIDING

Senator EXON. The committee will please come to order. Admiral Watkins, we certainly welcome you here this morning to this very, very important hearing. We understand that you must leave by noon. We will accommodate you and move this along as quickly as we can. There will be lots of questions, I am sure, with regard to the latest proposal from you, as the Secretary of Energy.

Over the next several months, the Subcommittee on Strategic Forces and Nuclear Deterrence will hold a series of detailed hearings in review of the Department of Energy Fiscal Years 1992–1993 Authorization Request. In these hearings, we will follow up in detail on the issues confronting the Department of Energy, raised here today and elsewhere. Of particular concern is the Department's Environmental Restoration and Waste Management Program. This program is responsible for the environmental clean-up as well as the bulk of waste management activities. This program is, in many respects, the key to the Department's future.

In addition to establishing and maintaining a credible clean-up program, the Department of Energy must ensure that the waste materials generated today, and in storage from past operations, are managed, stored, and ultimately disposed of in compliance with applicable environmental laws and consistent with the health and safety of the Department of Energy, contractor employees, and the public. The Department of Energy must solve the waste problems of today. It must also plan to reduce, or eliminate where possible, the waste generated in the future.

Planning for the future must be adequately funded and is especially important to the efforts to clean up the effects of the past 50 years. The effort must be consistent with a strong waste minimization, pollution prevention, and hazardous materials substitution and elimination program. Future production activities must be accomplished in compliance with all applicable environmental laws.

This committee has been actively involved, both in providing additional funding for technology development in the Department of Energy budget, as well as creating the strategic environmental research and development program. I am pleased that the Department of Energy is actively involved and supporting this program. The Department of Energy has begun this effort to develop the technology needed to address the many clean-up and waste management problems, but, the problems are technically complex, and there is a long, long way to go. We will continue to work with the Department of Energy in this area.

Another important aspect of the Department of Energy's future is the New Production Reactor. This new reactor will replace the aged Savannah River reactors and will assure a continued supply of tritium in the 21st century. At the same time the Department of Energy moves forward with construction of the New Production Reactor, it should continue to explore a variety of technological alternatives to serve as a possible contingency capability or successor systems.

In the coming year, the Subcommittee on Strategic Forces and Nuclear Deterrence will also focus on a variety of nuclear weapons issues, including weapons safety, nuclear weapons and materials security issues, and issues relating to the manufacture of weapons, such as pit reuse and remanufacture, as well as verification and control issues. We will also look at issues relating to Department of Energy contractors.

The Department of Energy continues to face an uphill battle to achieve the ambitious goals that have been set for it. We are aware of the efforts that you have put into getting the Department on a new course and, Mr. Secretary, we commend you for that. I look forward to working closely with you to achieve these mutual goals.

With that, are there any additional opening statements?

Senator **GLENN**. Yes, Mr. Chairman. I would like to make an opening statement.

Senator **EXON**. Go ahead, Senator Glenn.

Senator **GLENN**. Thank you very much, Mr. Chairman. I ask for recognition now only because I have to chair another hearing shortly. I did want to give a statement this morning to indicate my concern, which is along the same lines that the Chairman has been talking about.

Over the past decade, our national policies regarding production of nuclear weapons have undergone a remarkable transformation. The buildup of the nuclear arsenal, so aggressively promoted through the 1980s, ultimately became a major factor in the incipient collapse of the Federal nuclear weapons industrial infrastructure. I think this happened because the Department of Energy weapons complex has isolated itself from the growing value placed on environmental safety and health protection by our society. We had for a long time gone ahead with production and just said put the waste out behind some place and we'll deal with it later. Well, now is later.

Now we find ourselves looking at an entirely different dilemma from that of the early 1980s. Instead of facing the risks of not having enough nuclear weapons, we face risks to our health, environment, and economy from the legacy of the nuclear arms buildup.

The Department of Energy now has to deal with the problem of production facilities closed for safety reasons, and must manage in a safe and cost effective manner the growing number of nuclear warheads being unilaterally removed from the U.S. arsenal. Given these circumstances, the problems in allocating shrinking resources between production and clean-up have never been greater.

As the Department of Energy's Secretary, Admiral Watkins is as acutely aware of these problems as I am, and, to his credit, Secretary Watkins has engaged in a huge effort to put the Department of Energy on a safe, responsible, and sound operational basis. His most recent initiative, to provide a road map to reconfigure and modernize the Department of Energy nuclear weapons complex, is well thought out.

Secretary Watkins, I continue to support your efforts fully. I think I am one of your biggest boosters here on the Hill. I think you are doing a magnificent job. But, it has taken a long, long time to turn that whole thing around, longer than any of us had anticipated. Like other initiatives to improve the Department of Energy, some of these things take a considerable amount of time and compete with other priorities for funding.

In 1988, after a hearing by the Governmental Affairs Committee, which I chair, uncovered some very serious safety problems, the Department of Energy indicated it would take about $250 million to refurbish the Savannah River plant reactors so they could be safely restarted. We were told this was a top priority and had to be met to avoid threats to our national security. Now we face the prospect of having to spend around $4 billion between 1988 and 1993, in order to have one reactor operate at reduced power.

The need for tritium to service the nuclear arsenal, according to a recent report by the General Accounting Office, is ample to forego reactor restart for perhaps several years. Now, I find this to be particularly disturbing, after learning at a February hearing of Governmental Affairs about the significant internal cuts in the Department of Energy's Office of Environmental Restoration and Waste Management, that Environmental Restoration and Waste Management had to take to meet the Office of Management and Budget's fiscal year 1992 target amount.

According to documents that we obtained, the Department of Energy will have to, and I quote out of their appeal, "delay a number of planned clean-up actions which will make it necessary to renegotiate a number of agreement milestones with the Environmental Protection Agency and the States." This is because the clean-up budget took a $900 million internal cut, while production sustained only a $300 million cut. The total figure for Environmental Restoration and Waste Management originally was $5 billion. It was cut to $4.1 billion. Production was at $8.4 billion and was cut back to $8.1 billion.

According to the appeal to the Office of Management and Budget that was filed out of the Department of Energy, and I quote again, "the clean-up budget cut places the Secretary in the position of favoring production over environment," and it "forces the Department of Energy to try to amend existing compliance agreements by invoking dispute resolution provisions." Also these cuts, and I quote again, "will result in the shut-down of production processing facilities shortly after restart," and "will compromise the integrity of the Five Year Plan."

Those are some mighty powerful statements out of that appeal. I would like very much to know exactly how these cutbacks will affect environmental compliance at all of the Department of Energy sites and what production processing facilities face closure shortly after restart because of compliance problems, if that is true.

Also, I was disturbed by the follow-up to my question to the Department of Energy at the Governmental Affairs hearing regarding compensation for radiation injury to Department of Energy workers. Last year, the Department of Energy strongly supported a provision which was added to the fiscal year 1991 Department of Defense authorization bill that provides a compensation program for over 100,000 nuclear test site workers. The program was supported as an alternative to allowing contractors involved in the bomb testing program to be sued. Remarkably, this was done without the benefit of any studies to determine what health risks this large group of workers may have.

The Department of Energy now indicates that this was an exception and does not support extending such benefits to other classes of Department of Energy workers. Does this mean the Department is only willing to provide compensation in order to spare contractors and government the embarrassment and expense of litigation?

This has not seemed to bother the Department of Energy at other sites. For example, at Rocky Flats, I have learned that the Department of Energy has paid out $2.3 million in lawyers' fees in order to avoid having to spend $400,000 in worker's compensation. So I strongly believe that the Department of Energy has to develop a compensation policy based on merits which goes across the board and treats all Americans fairly.

The controls that the Department of Energy has over spending leave some things to be desired. The Savannah River reactor restart is a case in point. At this time, the Department could well defer the restart of the K-Reactor until some of the outstanding safety issues are resolved and until better controls are exercised over them.

Also, the Department should support the additional funds to meet the spending goals for the clean-up program. Otherwise, it just has to appear to everybody who follows this closely that production is, once again, being given a blank check at the expense of clean-up and at the expense of Americans who face risks from exposure to dangerous substances at Department of Energy sites. That is how we got into the whole mess over about three or four decades. We just do not want to see ourselves go down that road again.

So, Mr. Chairman, I appreciate your forbearance here in letting me make this statement. I hope that the Secretary can address some of these points, and we will be in touch later on.

Senator EXON. Thank you very much, Senator Glenn. Senator Thurmond, do you have an opening statement?

Senator THURMOND. Yes, thank you. Mr. Chairman, I want to associate myself with your opening statement and join you in welcoming Secretary of Energy James D. Watkins. We are all familiar with the tremendous job that Admiral Watkins is doing at the Department of Energy and hope he will be there for many years to come.

Mr. Chairman, this committee has witnessed first-hand the changes initiated in the Department of Energy under the leadership of Secretary Watkins. I believe he has taken on the tough issues facing our nuclear weapons production complex.

We already are beginning to see the fruits of his initiatives. Among these are the restart of the K-Reactor at the Savannah River site later this summer; the start of testing at the Waste Isolation Pilot Plant in New Mexico and the Defense Waste Processing Facility at the Savannah River Pilot Plant; the publication of the Nuclear Weapons Complex Reconfiguration Study; and the first dent in the substantial clean-up task facing this Nation.

Mr. Chairman, not as visible, but in the long run more important, are the changes in the attitudes of the workforce at the Department of Energy. The 1980s saw a virtual halt of all production activities throughout the Department of Energy. The workforce was demoralized—criticized by some in Congress and the Nation for its lack of concern for the environment, and blamed for 40 years of alleged mismanagement of our nuclear weapons complex. Since Secretary Watkins took the helm of the Department of Energy, this trend has been reversed. There is a new sense of purpose among the employees at the Department, which will contribute to a revitalized nuclear weapons complex.

Mr. Chairman, I am concerned that this Nation is facing unilateral nuclear disarmament. We have not manufactured a nuclear weapon in the past year. We have no capability to produce tritium to maintain our current stockpile. The restart of the K-Reactor at the Savannah River site later this year is only an interim step toward maintaining our nuclear deterrence. Concurrent with the restart, we must begin pit fabrication at Rocky Flats.

Finally, we must make a commitment to complete the New Production Reactor by the year 2000 or face the reality that we may not be a nuclear power as we enter the 21st century.

I am disappointed that Secretary Watkins chose to abandon the two-reactor, two-site plan that this committee has supported in the past. However, considering the fiscal crisis this Nation is facing, his decision appears appropriate. I trust the committee will go on record as supporting the decision and, at the same time, support the funding for the New Production Reactor program.

The fiscal year 1992 budget requests $500 million for the New Production Reactor program. This amount is over $100 million less than requested by the New Production Office to ensure a robust NPR program. Since this program is vital to the future of our Nation's weapons production program, I hope the committee will look favorably at increasing the funding for the NPR program.

Mr. Chairman, the Secretary and the people at the Department of Energy deserve our support and the funding necessary to carry out the missions which Congress and the Nation have given them. I know that under your leadership this committee will provide that support. Thank you very much.

Senator EXON. Thank you very much, Senator.

Senator WARNER. Mr. Chairman, I will waive my opening statement so that we can proceed with the witness.

Senator EXON. Do you wish to put it in the record at this time?

Senator WARNER. Yes, Mr. Chairman.

Senator EXON. Without objection, that is so ordered.

[The prepared statements of Senator Warner and Senator Dixon follow:]

PREPARED STATEMENT BY SENATOR JOHN W. WARNER

Mr. Chairman, this is a very important committee meeting. DOE has the responsibility to maintain the Nation's nuclear deterrent capability. That means that DOE must make sure the United States can design, test, manufacture, and maintain sufficient-nuclear weapons to prevent any adversary from concluding that nuclear war will be an acceptable choice. But we are in very dangerous times. The Soviet Union remains our principal adversary, the only country that can destroy the United States. And that is because they have a huge nuclear capability, a capability that they keep improving. Mr. Chairman, let me say that again: the Soviet Union, in the face of economic and political problems that are just devastating, is still investing huge amounts to bring new, improved, modernized, survivable, and potent strategic nuclear weapons into its forces.

We, on the other hand, are stymied. We have not built a nuclear weapon for over a year. We have not installed new safety options in nuclear weapons for a year. We have not even been able to dismantle a nuclear weapon for a year. And all this because Rocky Flats is closed. Senator Thurmond has pointed out that the United States is rapidly becoming a former nuclear power. This is just unacceptable.

When you were the Chief of Naval Operations, I am sure that DOE heard from you often and urgently on the need to get on with nuclear weapon deliveries. So I know you understand the problem, and I know you will do what is needed to get us going again.

I have looked into the situation at Rocky Flats. I totally agree that changes and repairs are needed. But I cannot agree that the Rocky Flats plant was unsafe, or ever operated in an irresponsible way. I would even offer the judgment that the Rocky Flats plant is by far the safest nuclear weapons plant of any nation in the world, bar none. Of course we need to do whatever we can to assuage the doubts of the people of Denver—whatever we can short of abandoning the Nation's nuclear deterrent capability.

Admiral Watkins, you have about the toughest job in town—page 1 of the Prune Book. I admire you greatly for what you have accomplished and promise my help for the future.

PREPARED STATEMENT BY SENATOR ALAN J. DIXON

Mr. Chairman, it is a pleasure to welcome today the Secretary of Energy, the distinguished Admiral James D. Watkins.

I look forward to hearing from him about the Department of Energy's fiscal year 1992 budget request for national security programs funded in the Atomic Energy Defense Activities Account. This vital account represents almost two-thirds of the Department of Energy's total budget.

I am particularly interested in ensuring that these funds will be used to create a safe and secure environment within the Department's manufacturing operations for nuclear materials.

I am also very interested in the Environmental Restoration and Waste Management activities funded in this account.

I look forward to the testimony of our distinguished guest.

Thank you, Mr. Chairman.

Senator WIRTH. Mr. Chairman?

Senator EXON. Senator Wirth.

Senator WIRTH. Mr. Chairman, my apologies, but I have a markup at 9:30 on the Department of Energy energy bill on which we are working. It's the "other hat" of Secretary Watkins. If I might, I just have two questions that I would like to lay out publicly and hope to get back to if that is all right.

First of all, I want to thank you, Mr. Secretary, for your yeoman efforts at trying to clean up Rocky Flats, and those of Mr. Duffy and Mr. Claytor. We appreciate the enormous efforts that you have put into that, and also for your understanding of the water problems surrounding the plant.

Mr. Secretary, my first question focuses on need, the second question focuses on safety. You have stated over and over again that any restart of the plant should be able to stand up to knowledgeable criticism, including that of Congress. We in Congress, the government, have canceled a variety of nuclear weapon systems. The W-88 Trident warhead is undergoing safety review, and the Department of Energy labs are studying reuse of warhead pits without fabrication. And yet, it appears to us in the areas surrounding the Rocky Flats plant that we in the government are rushing to restart Building 707 operations, even though those will be out of compliance with health and safety standards and environmental laws. We do not understand what the rush is to override national security and safety considerations at a time when the national security needs would not seem to dictate that.

As you know, the Rocky Flats plant is in violation of RCRA land disposal standards. Governor Roemer has extended the waiver several times, but will refuse to do so when the current waiver expires on May 10.

If the need is there, we note in the budget documents on the safety side that the present fire and security systems at the Department of Energy are "inadequate for the requirements of the Rocky Flats plant today and totally inadequate for the plant in the future." In the Department of Energy's words, "numerous deficiencies and vulnerabilities undermine the ability of the Rocky Flats management and staff to properly maintain security for special nuclear materials and classified materials, provide for mandatory fire protection, adequately ensure life and safety, and responsibly protect the environment and the public health." These are the words out of Department of Energy budget documents which, you can understand, provide a great deal of alarm to people who are living in the Denver metropolitan area where the Rocky Flats plant is located.

So, the two questions coming out of that, Mr. Secretary, are these: first, what is the need for the rush to go ahead and try to open 707 at a time when, second, it is clear from your own documents that 707 is not going to meet appropriate safety and environmental standards? I know that is a big order, and I will attempt to get back here. We have talked about these things before, but I think it is time to upgrade and get answers to all of these questions.

[The information follows:]

With regard to the need to restart Building 707 in a timely manner, Building 707 is the only facility in the Nation capable of producing the types and numbers of plutonium pits needed to be able to meet the national defense requirements dictated by the President's Stockpile Plan. No other options are available.

With regard to the question raised that Building 707 would not meet the Department of Energy's safety and environmental standards, I am enclosing the attached letter dated June 18, 1991, sent to several Members of Congress, including Chairman Exon. This letter describes in detail our systematic approach for the resumption of activities at Rocky Flats and the restart of the Savannah River reactors. A key point made in the letter is that the Department is making detailed reviews of contractor compliance with existing Department orders and that any non-compliance will be addressed in accordance with a process analogous to that used by the Nuclear Regulatory Commission for commercial nuclear powerplants. If the requirements cannot be complied with, the contractor is to correct the deficiency or submit a request for a Compliance Schedule Approval which:

1. Specifies a schedule for entering into full compliance;
2. Identifies compensatory measures to be put into place until full compliance is attained; and
3. Provides a technical justification explaining why a proposed course of action is sufficient to achieve an appropriate level of safety.

The letter also describes several other activities that will take place prior to my approval of resumption of activities at Rocky Flats and Savannah River. In summary, all of these activities will serve as a basis for my decision on approving resumption of operations which will not begin until I am entirely satisfied that the health and safety of the public and our workers and the environment are protected.

THE SECRETARY OF ENERGY,
Washington, DC, June 18, 1991.

Hon. J. JAMES EXON,
Chairman, Subcommittee on Strategic Forces and Nuclear Deterrence,
Committee on Armed Services,
U.S. Senate,
Washington, D.C.

DEAR MR. CHAIRMAN: There have been a number of concerns expressed regarding the status of compliance with safety requirements at Department of Energy (DOE) facilities. I welcome the opportunity to address these concerns in some detail in order to explain how this issue has been and is being addressed at the Rocky Flats facility and as part of the restart plans for the Savannah River reactors.

It is important to recognize that the review conducted at my direction in early 1989 of existing DOE Orders, instructions, and standards indicated the need for drastic upgrading of these internal DOE directives. Over the years, a lack of coherent oversight resulted in a massive jumble of conflicting and outdated directives. The process of correcting this situation has been ongoing and will continue. It has been made even more complex by the need to have those DOE Orders dealing with nuclear safety made subject to the rulemaking process.

The underlying question is how one handles the current operation of a nuclear manufacturing or processing facility designed, built, and operated to standards and requirements that have been or are being substantially upgraded. This issue is not a new one, nor is it unique to DOE. For many reasons, DOE has decided to address this issue using an approach which, simply stated, has been to initiate reviews at each of its facilities to determine whether there are sufficient bases to permit continued safe operation coincident with the upgrade review and implementation process. These DOE reviews are performed by a number of different and independent groups depending on the facility involved. Based on the results of these reviews, we then decide whether to continue or curtail operations, and when to eventually resume operations which were curtailed.

This approach is analogous to that which provides the basis for determinations relating to the continued operation of older facilities in the commercial nuclear industry. There are several commercial nuclear power plants that are approximately 30 years old and hence, in large part, contain designs based on standards that existed at that time. To deal with this issue the Nuclear Regulatory Commission developed a program called the Systematic Evaluation Program (SEP) to evaluate whether and how to apply to these older facilities newly developed standards, as well as new interpretations of old standards. This approach has been successfully implemented for 10 commercial nuclear power plants during a period of more than seven years while these facilities continued to operate.

Specific to Rocky Flats, you will recall that I announced in 1989 that we would undertake to accomplish safety improvements in a number of areas—principally in hardware and personnel readiness, as well as a validation of the safety analysis of the facility. My plan then, as now, was to reach an appropriate level of safety, with full recognition that much more would remain to be done. This is a part of my commitment to not allow resumption of operations at the Rocky Flats facility until I am fully satisfied that public and worker health and safety and the environment would be protected. A similar but more extensive program of safety improvements has been underway for the Savannah River reactors since 1988. Again, I reiterate my commitment to not allow restart of the reactor facilities until I am fully satisfied that public and worker health and safety and the environment would be protected.

As I indicated earlier, my decision regarding the resumption of activities at Rocky Flats or restart of the Savannah River reactors will not be made until a number of confirmatory activities are completed. These activities will assure that safety remains paramount. They are in addition to the many and detailed reviews of the hardware, procedures, and training of operating personnel, by the contractor (EG&G and Westinghouse) and a greatly augmented DOE staff at Rocky Flats and Savannah River, during the years of upgrading which has occurred while these facilities have been shut down.

In addition to the safety reviews by the operating contractors and local DOE personnel, the results of activities will be reviewed by a team of experts chartered by the contractor's corporate headquarters and drawn from other contractor facilities. After the corporate review is complete, DOE will conduct its own independent Operational Readiness Review. The Operational Readiness Review team consists of technical experts from within DOE, as well as independent consultants. The members of the team were carefully selected to provide the necessary technical expertise and an appropriate degree of independence to assure a thorough and objective review. Furthermore, oversight reviews will continue to be performed by the DOE Offices of Nuclear Safety and the Assistant Secretary for Environment, Safety and Health. Additional reviews will be conducted by the Advisory Committee on Nuclear Facility Safety (for Rocky Flats). Finally, the statutorily created Defense Nuclear Facilities Safety Board will continue its oversight activities of the Rocky Flats and Savannah River facilities. As I have indicated in past comments regarding our review process, we are committed to sharing the results of the DOE Operational Readiness Reviews with the public and providing the opportunity for a public hearing. I am confident that this process will provide a thorough and exhaustive assessment of the readiness of these facilities to resume operations safely.

The Department is also performing reviews of the contractor compliance with existing DOE Orders. This is in addition to the standard on-going DOE oversight reviews. Any non-compliance identified by these reviews will be addressed in accordance with a Defense Programs process that is analogous to that used by the Nuclear Regulatory Commission for commercial nuclear power plants. For example, if a requirement is not being complied with, the contractor is to correct the deficiency or submit a request for a Compliance Schedule Approval (CSA) which:

1) specifies a schedule for entering into full compliance;

2) identifies compensatory measures to be put into place until full compliance is attained; and

3) provides a technical justification explaining why the proposed course of action is sufficient to achieve an appropriate level of safety.

Some of these CSA requirements already have been completed and will be verified before resumption of operations.

Moreover, though other Orders have not yet been subjected to detailed compliance reviews, our current efforts go well beyond the ordinary oversight functions that are performed by DOE personnel and DOE Headquarters personnel. Ongoing contractor self-assessments of conformance with existing DOE Orders continue. The contractor projects that it will have completed these self-assessments for all safety and environmental Orders prior to facility restart. The DOE review of compliance with health, safety, and environmental Orders, which has been begun prior to resumption, will continue during and following the period encompassed by the phased facility restart plans. We are confident that our process assures that an adequate level of safety will be achieved, even though the completion of all possible reviews will not be a pre-condition to the initial phases of resumption of operations.

I hope this has given you some insight as to how DOE is approaching the operation of the Rocky Flats facility and Savannah River reactors.

Sincerely,

JAMES D. WATKINS,
Admiral, U.S. Navy (Retired).

Again, Mr. Secretary, thank you very much for being here. I will go now to Secretary Moore and his deliberations in the next building. Thank you very much, sir.

Senator **EXON**. Thank you, Senator Wirth.

Senator **KENNEDY**. Mr. Chairman.

Senator **EXON**. Senator Kennedy.

Senator **KENNEDY**. Mr. Chairman, I'm afraid that I'm in the same situation as my colleagues. We have Attorney General Thornburgh before the Judiciary Committee on the Crime Package. I wonder if I could just make a very brief comment before I have to leave.

Senator **EXON**. Yes, Senator Kennedy. We are accommodating everyone this morning and are glad to accommodate you.

Senator **KENNEDY**. I join in welcoming Admiral Watkins not only for the job he is doing here, but he has also been one of the leaders in the administration in terms of community service programs and also bringing many of those who are leaving the service and the Navy into the teaching profession. So he is a man of many different dimensions, and many of us understand that and appreciate it.

Admiral, just 2 years ago, in the committee's report on the Department of Defense authorization bill, we requested a report on the potential for nuclear weapons remanufacture without making changes in nuclear design that would require nuclear tests. Then the Department of Energy failed to respond to that request. So in 1991, we put a requirement in statutory language with a February 1, 1991 date. That date was missed. But you sent us a letter after the fact saying the study would be ready by March 31. That deadline was missed, and the study arrived last night, too late for any of us, really, to get a look at it or to examine it.

I must say that the unclassified report, even in a very brief survey, is so devoid of information and supporting detail as to be, I think, probably relatively worthless. I think there is more information about these subjects in the Washington Post, for example. You have even gone so far as to reclassify the weapons types in the stockpile. Most of that can be read about in the Bulletin of Atomic Scientists and other magazines.

I will include the report in the record. It is 6½ pages long—6½ pages—and it has taken that length of time to produce. I would ask the Chairman to put it in the record at an appropriate place.

[The information follows:]

REMANUFACTURING
STUDY

VOLUME I - UNCLASSIFIED REPORT

PREPARED BY

DEPARTMENT OF ENERGY

DECEMBER 1990

REMANUFACTURING STUDY

VOLUME I - UNCLASSIFIED REPORT

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I. EXECUTIVE SUMMARY

The Department of Energy (DOE) performed a two-phase study on the remanufacture of nuclear weapons. The first phase responded to requirements in the Fiscal Year (FY) 1989 National Defense Authorization Act, and evaluated in detail six representative stockpiled nuclear weapons to determine the feasibility of remanufacture. The second phase was performed in response to the FY 1991 National Defense Authorization Act. This phase was wider in scope as it included all weapons which are projected to remain in the stockpile beyond the turn of the century. The second phase was done in less depth to accommodate the required delivery date of the overall study.

The first phase consisted of a detailed evaluation of all aspects of weapon design, production, and certification for six representative weapons. The six weapons were selected to include the broadest possible range of problems: a wide range of technology, designs from both nuclear design laboratories, weapons not currently in production, weapons with multiple yields, weapons with modern as well as older electronics, and weapons with advanced as well as older security features. The conclusions of this study were that the three newer and one of the older weapons could probably be successfully remanufactured while two of the older weapons could not. Of those that could be remanufactured, the one older weapon and one of the newer weapons lacked modern safety and security features.

The second phase of the study examined a much larger set of weapon designs. The Department of Defense (DOD) defined the weapons scheduled for retirement and those scheduled for retention in the stockpile beyond the turn of the century. The weapon laboratories then categorized each weapon type according to the number of nuclear tests required to reintroduce them into the stockpile.

The second phase of study concluded that remanufacture of most existing weapons could probably be accomplished. In some instances significant development engineering would be necessary to re-establish capabilities which no longer exist in the nuclear weapons complex. Also, to ensure reliability, at least one nuclear test would be required to certify any weapon which has been out of production for an extended period.

With the recent Congressional and Departmental (both Defense and Energy) emphasis on nuclear weapon safety, an important assumption of the study was that no existing design would be remanufactured without upgrades, where necessary, to incorporate modern safety design features. Any such changes would also require nuclear testing.

Finally, it should be noted that there is little cost savings associated with remanufacture, as opposed to new development, because the indirect (overhead) cost of production, which dominates DOE costs, is insensitive to the age of the design.

As requested by Congress, this report is divided into an unclassified section (Volume I) and a classified section (Volume II). Most of the details regarding weapon safety features, weapon designs, yields, and costs are classified, and therefore are contained in Volume II.

II. STUDY BACKGROUND

In Section 1436 of the FY 1989 National Defense Authorization Act, Congress directed that the DOE study the ability to remanufacture nuclear weapons. In order to provide a comprehensive yet timely response, six representative nuclear weapons were chosen for the first phase of the remanufacturing study to identify issues and problems associated with weapon remanufacture. Progress of this study was reported as part of the 1989 Program Status of Preparations for Further Limitations on Nuclear Testing.

At about the same time that the first phase of the study was nearing completion, the Senate Armed Services Committee, in the report on the National Defense Authorization Act for FY 1990 and 1991, clarified their request which became Section 3131. This request stipulated specific areas to be investigated. The major difference between the 1989 and 1990 requests was in Section 3131 which required a study of all weapons that are to be retained in the stockpile rather than a representative sample. Section 3131 of the FY 1991 National Defense Authorization Act requires that the report be delivered to Congress by February 1, 1991. The response to this request formed the second phase of the remanufacturing study. The insight gained from the comprehensive first phase study of six representative weapons, coupled with an overall systems analysis, was used in determining the results for all weapons to be retained in the stockpile.

III. SECTION 3131 REQUEST

Section 3131 requires that the report contain the following six items:

Item 1: A specification of the nuclear warheads and bombs now in the stockpile which will not be replaced at the end of their stockpile life;

Item 2: A case-by-case analysis of the technical requirements and estimated costs to prepare for the remanufacture of each certified nuclear weapon design scheduled for retention in the stockpile;

Item 3: A specification of certified weapon designs designated for retention in Item 2, above, that could be remanufactured and recertified for the stockpile without conducting a nuclear explosive test;

Item 4: Identification of those certified weapon designs in Item 2, above, requiring changes to permit remanufacture which could be recertified with a single nuclear explosive proof test to demonstrate proper performance, and the minimum essential yield for each such test;

Item 5: Identification of those certified weapon designs planned for retention in Item 2, above, requiring modification for remanufacture to the degree that more that one test is indicated to assure proper performance, and the minimum essential number and yield of tests required for each design so modified; and

Item 6: A description of other options that may be employed in the event of reduced reliance on nuclear test explosions, ranging from increasingly extensive modifications of existing designs to the introduction of entirely new designs. The costs in time, funds, numbers and yields of tests, and the postulated national security benefits of each of these options shall be clearly set forth in a manner which allows the relative costs and benefits of all the options presented to be directly compared.

These six items will be referred to by "Item Number" throughout the remainder of this report.

IV. REMANUFACTURING ISSUES

Weapon remanufacture in the future may be limited by material availability, component availability, supplier availability, or environmental, safety, and occupational health (ES&H) changes in the weapons production complex. The potential for serious ES&H impacts grows rapidly in today's environment where materials and practices once permitted are now unavailable or illegal. Another limiting factor is expertise. Unless a remanufacturing line is kept active, expertise erodes and a restart requires as much work as starting up production on a new design.

Some of the older weapon systems which are currently scheduled for long term retention in the stockpile (candidates for remanufacture) do not meet all the current safety design criteria. In order to meet these stricter safety guidelines, weapon handling procedures have been modified to ensure proper safety and security and other compensating measures have been taken. While these actions ensure acceptable safety, it is better to "build in" safety by producing weapons with the latest safety design features. With the increased emphasis on weapon safety by Congress, the DOD, and the DOE, and given the ever-improving ability to design safer weapons, it would not be prudent to remanufacture existing weapons without appropriate upgrading of safety related design features. Therefore, an assumption of the study is that any weapon which is remanufactured will not be exactly replicated, but will be redesigned to include the latest safety features.

V. RESULTS

In the first phase of the study, six nuclear weapons which are representative of the stockpile were selected for analysis. This approach was used because of the sheer volume of design and production information needed to manufacture, or remanufacture, a weapon (i.e., a typical weapon requires approximately 35,000 drawings, specification, and procedures all of which must be reviewed to properly assess the risks associated with a particular weapon remanufacture). The specific weapons selected for the study were chosen to include the broadest possible range of potential concerns: a wide range of technology; designs from both nuclear design laboratories; weapons not currently in production; weapons with multiple yields; weapons with modern as well as older electronics, and weapons with advanced as well as older security features. Once the candidates were selected, the production plants evaluated their ability to replicate the design based on four criteria: availability of specifications and procedures, materials, tooling, and expertise.

The first phase determined that specifications, procedures, materials, tooling, and specialized expertise did not exist to allow hardware replication in all cases. Some materials are not available due to loss of capabilities in the complex. Others are not available because the original manufacturer no longer produces the material. For the three weapons with the most recent development dates, no issues were found that would preclude replication, although certification of weapon performance by underground nuclear test would still be required. One of the three with the oldest development dates could be remanufactured, although it would not be prudent to do so as it does not incorporate modern safety and security features. The other two older systems would require significant redesign and redevelopment efforts before they could be manufactured. Such redesigned systems would require more than one nuclear test. In general, multiple nuclear tests to certify a remanufactured weapon may be required should designers with extensive test experience not be available, should new safety or security features be included in the remanufactured weapon, or should performance anomalies occur in a test. Complete results are included in Volume II.

Using the results of the first phase of the study as a guide, an analysis of each remaining weapon was conducted. Information was developed to respond to the six items in the Section 3131 request.

A compilation of the results of the study, by Section 3131 item number, is given below.

A. Item 1:

> "A specification of the nuclear warheads and bombs now in the stockpile which will not be replaced at the end of their stockpile life."

In accordance with current planning, three types of weapons will be retired and not replaced. There are 12 types of weapons which will be retired, but their role will be filled by more modern weapons that are currently in the stockpile or in the design and production process. The specific weapons types are discussed in Volume II.

B. Item 2:

> "A case-by-case analysis of the technical requirements and estimated costs to prepare for the remanufacture of each certified nuclear weapon design scheduled for retention in the stockpile."

In accordance with current planning, 20 types of weapons are scheduled for retention in the stockpile (and as such are candidates for the remanufacturing study). Of these systems, seven are currently in production.

For each of these systems, the laboratories evaluated the safety features included in each design, and then catalogued each into categories corresponding to Items 3 through 6 of the Section 3131 request.

The details of the specific weapon types, the categorization, and the scoping costs are discussed in Volume II.

C. Item 3:

> "A specification of certified weapon designs designated for retention in Item 2, above, that could be remanufactured and recertified for the stockpile without conducting a nuclear explosive test."

There are no weapons in this category. With any significant break in production, at least one successful nuclear test is required for recertification of the weapon.

D. Item 4:

> "Identification of those certified weapon designs in Item 2, above, requiring changes to permit remanufacture which could be recertified with a single nuclear explosive proof test to demonstrate proper performance, and the minimum essential yield for each such test."

There are 15 weapons in this category. Classified details are included in Volume II.

E. Item 5:

> "Identification of those certified weapon designs planned for retention in (2) above requiring modification for remanufacture to the degree that more than one test is indicated to assure proper performance, and the minimum essential number and yield of tests required for each design so modified."

There are six weapons in this category including one which has upgraded safety features. Classified details are included in Volume II.

F. Item 6:

> "A description of other options that may be employed in the event of reduced reliance on nuclear test explosions, ranging from increasingly extensive modifications of existing designs to the introduction of entirely new designs. The costs in time, funds, numbers and yields of tests, and the postulated national security benefits of each of these options shall be clearly set forth in a manner which allows the relative costs and benefits of all the options presented to be directly compared."

The relationship between weapon remanufacturing and the need for nuclear testing for various systems has been described in responses 1 - 5. In response to item 6, there may be options that the U.S. weapons program could pursue to be in a better position to maintain confidence in its nuclear weapon stockpile with less reliance on nuclear testing. These options are different depending on the severity of, and time scales for imposing, increased test limitations. U.S. practice has been to employ warheads that are integrated into the delivery system. There is, therefore, an interrelationship between the delivery system and the warhead design employed in it. The degree to which a system can be modified to make it less reliant on testing is therefore dependent on system type. Proceeding to develop such options requires the execution of nuclear tests and a supporting research and development program. The degree of decreased reliance that can be achieved is dependent upon the design strategy selected and the scope and outcome of the combined research, development, and testing program that can be accomplished prior to imposition of further limits. The potential options (minor modifications, major modifications, and new designs) are discussed in Volume II.

VI. CONCLUSIONS

Remanufacture of existing designs could probably be accomplished in most cases. Locating, or recreating, original specifications, procedures, materials, and tooling may be difficult and expensive for older weapons. Significant development engineering might be necessary to re-establish capabilities which no longer exist in the nuclear weapons complex. Remanufacture by replication of existing designs is inappropriate where modern safety features are lacking. Because of the emphasis placed on safety, an important assumption of the study was that any remanufactured weapon would be redesigned to include the latest safety features.

Nuclear testing would be required in order to certify weapon performance for any remanufactured design, with or without safety upgrades. The basis for this is given in the classified Volume II.

The ability to replicate weapons will be affected by issues other than the availability of the original specifications and tooling. A major concern is materials availability. Stockpiling of materials for future use would be a costly undertaking and replication may still be precluded by material aging, the obsolescence of technology, or manufacturing techniques rendered unusable by changing ES&H requirements. To assure that future production of either newly designed or remanufactured warheads can be accomplished, scientists, engineers, and technicians presently engaged in weapons research, development, testing, and production must be relied upon to provide their expertise. Establishing and maintaining specialized expertise indefinitely to support remanufacture of a particular weapon is impractical.

Changing ES&H standards are a major factor. Future special nuclear material processing capability must be compatible with reduced waste generation, possibly eliminating some materials used in currently stockpiled weapons. Many materials used in past designs may not be acceptable by today's ES&H standards.

Other significant factors affecting future ability to remanufacture are (1) the restructuring or "reconfiguration" of the nuclear weapons complex, and

(2) design standardization initiatives. Reconfiguration is aimed at reducing the size, complexity, and diversity of the weapons complex, which means that some capabilities used for original manufacture of a weapon may not be available for future remanufacture. Design standardization has the same effect by reducing the number of alternatives (such as nuclear material alloys, explosives, etc.) available for design and production of future weapons. Finally, there is no assurance that remanufacturing will reduce costs. In fact, if remanufacturing prevents consolidating and standardizing production facilities, the cost for maintaining the options may be significantly greater than the cost to develop and build a new weapon.

For the reasons summarized above, remanufacture of nuclear weapons, except in some limited and presently unforseen cases, is not recommended.

APPENDIX A

FISCAL YEAR 1989

NATIONAL DEFENSE AUTHORIZATION ACT

SECTION 1436

SEC. 1436. NUCLEAR TEST BAN READINESS PROGRAM

(a) FINDINGS.—The Congress makes the following findings:

(1) On September 17, 1987, the United States and the Soviet Union announced that they would resume full-scale, stage-by-stage negotiations on issues relating to nuclear testing, including further intermediate limitations on nuclear testing leading to the ultimate objective of a comprehensive nuclear test ban.

(2) It was agreed that the first step in these negotiations would be to reach agreement on verification measures that will make possible the ratification of the Threshold Test Ban Treaty of 1974 and the Peaceful Nuclear Explosions Treaty of 1976.

(3) To achieve the agreement on verification measures, the United States and the Soviet Union have agreed to design and conduct a Joint Verification Experiment at the test sites of each country during the summer of 1988.

(4) At the Moscow summit in May 1988, President Reagan and General Secretary Gorbachev reaffirmed their commitment to negotiations on "effective verification measures which will make it possible to ratify the Threshold Test Ban Treaty of 1974 and Peaceful Nuclear Explosions Treaty of 1976, and proceed to negotiating further intermediate limitations on nuclear testing leading to the ultimate objective of the complete cessation of nuclear testing as part of an effective disarmament process".

(b) ESTABLISHMENT OF PROGRAM.—The Secretary of Energy shall establish and support a program to assure that the United States is in a position to maintain the reliability, safety, and continued deterrent effect of its stockpile of existing nuclear weapons designs in the event that a low-threshold or comprehensive ban on nuclear explosives testing is negotiated and ratified within the framework agreed to by the United States and the Soviet Union.

(c) PURPOSES OF PROGRAM.—The purposes of the program under subsection (b) shall be the following:

(1) To assure that the United States maintains a vigorous program of stockpile inspection and non-explosive testing so that, if a low-threshold or comprehensive test ban is entered into, the United States remains able to detect and identify potential problems in stockpile reliability and safety in existing designs of nuclear weapons.

(2) To assure that the specific materials, components, processes, and personnel needed for the remanufacture of existing nuclear weapons or the substitution of alternative nuclear warheads are available to support such remanufacture or substitution if such action become necessary in order to satisfy reliability and safety requirements under a low-threshold or comprehensive test ban agreement.

(3) To assure that a vigorous program of research in areas related to nuclear weapons science and engineering is supported so that, if a low-threshold or comprehensive test ban agreement is entered into, the United States is able to maintain a base of technical knowledge about nuclear weapons design and nuclear weapons effects.

(d) CONDUCT OF PROGRAM.—The Secretary of Energy shall carry out the program provided for in subsection (b). The program shall be carried out with the participation of representatives of the Department of Defense, the nuclear weapons production facilities, and the national nuclear weapons laboratories.

(e) ANNUAL REPORT.—The Secretary of Energy shall submit to Congress each year an unclassified report (with a classified annex as necessary) that describes the progress made to the date of the report in achieving the purposes of the program required to be established under subsection (b).

APPENDIX B

FISCAL YEAR 1991

NATIONAL DEFENSE AUTHORIZATION ACT

SECTION 3131

PART C—MISCELLANEOUS

SEC. 3131. REMANUFACTURE OF NUCLEAR STOCKPILE WEAPONS

(a) REPORT ON REMANUFACTURE OF NUCLEAR STOCKPILE WEAPONS.—The Secretary of Energy, in consultation with the Secretary of Defense, shall prepare a report on remanufacture of nuclear stockpile weapons that will require replacement at the end of their stockpile life. The report shall include the following information:

(1) A specification of the nuclear warheads and bombs now in the stockpile which will not be replaced at the end of their stockpile life.

(2) A case-by-case analysis of the technical requirements and estimated costs to prepare for the remanufacture of each certified nuclear weapon design scheduled for retention in the stockpile.

(3) A specification of certified weapons designs designated for retention in paragraph (2) that could be remanufactured and recertified for the stockpile without conducting a nuclear explosive test.

(4) Identification of those certified weapons designs included in paragraph (2) requiring changes to permit remanufacture which could be recertified with a single nuclear explosive proof test to demonstrate proper performance, and the minimum essential yield for each such test.

(5) Identification of those certified weapon designs planned for retention in paragraph (2) requiring modification for remanufacture to the degree that more than one test is indicated to assure proper performance, and the minimum essential number and yield of tests required for each design so modified.

(6) A description of other options that may be employed in the event of reduced reliance on nuclear test explosions, ranging from increasingly extensive modifications of existing designs to the introduction of entirely new designs, and the costs in time, funds, numbers, and yields of tests, and the postulated national security benefits of each of these options clearly set forth in a manner which allows the relative costs and benefits of all the options presented to be directly compared.

(b) SUBMISSION OF REPORT.—The Secretary of Energy shall submit an unclassified report with a classified appendix not later than February 1, 1991.

Senator **Kennedy**. This committee is going to have to take a long, hard look at the future of the Department's operations, I believe, and from what I have seen and heard today, the Department of Energy is simply not adjusting rapidly enough to the dramatic changes in recent years. Let me give you a few examples.

The Soviets have tested only once in the last 18 months. They have virtually shut down their major test site at Kazakhstan. They have again and again said that they are willing to sign on to a comprehensive test ban. And yet, despite all of that, your Department continues to cite the need for a Soviet threat assessment as the reason for testing the X-ray laser.

They are having enormous difficulty, when they have gone back to the Arctic, with the venting of a lot of radioactive materials. Any decision to test, as I understand it, is going to have to be made in the Supreme Soviet before there will be any movement. And, as we all know, it is enormously expensive and there does not appear to be any effort within the Soviet military to make such a request from the Supreme Soviet.

You talk about the need for a restart of the plutonium operation of Rocky Flats this year. And yet, the only new warhead scheduled for production there next year is the W-88, which you also say has safety problems.

Then you say that the Department is concerned about the health and safety of its workers in surrounding communities. Yet, the Department of Energy refuses to release the comprehensive radiation health data to researchers.

I know about your arrangements with the Department of Health and Human Services, and I will ask some questions. The Office of Technology Assessment has indicated in a very thoughtful study that your Department does not have the capacity or the motivation to make decisions about the production or clean-up priorities based on worker and community health protection criteria. The Department of Energy still has not developed an integrated, standardized health surveillance system for its workforce, and it still lacks essential data about potential threats to public employees that could serve to guide the clean-up. Given the current circumstances and the past record of abuses, I would be interested in understanding why we should not have OSHA, EPA, and NRC regulation and enforcement authority over Department of Energy facilities.

I will submit my questions on the health implications, Mr. Chairman, and questions on the other matters as well. I am very grateful to the committee for allowing me to make this statement, as I will have to excuse myself now. Thank you very much.

Senator **Exon**. Thank you, Senator Kennedy. Senator Warner, would you like 1 minute?

Senator **Warner**. Thank you, Mr. Chairman. Admiral, I also serve on the Public Works and Environment Committee. As you know, we will be taking up shortly the Mitchell-Eckart bill which will come before the Senate as a whole this year.

Now, my interpretation of the present—I repeat, the "present"—draft of that bill is that it could allow States to unilaterally confiscate indefinite amounts that they may demand of your clean-up budget. Therefore, I hope in the testimony today you will direct your attention to that pending legislation and provide this committee, as well as the other committee, such amendments as you feel appropriate to enable you to budget and schedule this work. Had you planned to cover that today?

Secretary **Watkins**. We are ready to cover it. I don't believe I have it thoroughly covered in the oral statement or the written statement to your satisfaction, Senator, because of what is going on over here right now, but we are ready to address the issues.

Senator **Warner**. Thank you very much, Admiral, and I apologize for my departure, Mr. Chairman.

Senator **Exon**. Thank you. Senator Nunn.

Chairman **Nunn**. Mr. Chairman, I just put my statement in the record.

[The prepared statement of Senator Nunn follows:]

Prepared Statement by Senator Sam Nunn

We meet today to hear testimony from Admiral James D. Watkins, Secretary of the Department of Energy. We are very pleased to have Admiral Watkins here with us this morning. We also welcome the two members of his staff who deal with the nuclear weapons complex, Assistant Secretary for Defense Programs, Richard Claytor, and Mr. Leo Duffy, the Director of the Office of Environmental Restoration and Waste Management.

Last May when you testified before the Armed Services Committee we focused on four of the many major challenges faced by the Department of Energy. These challenges—resuming production at a Savannah River site reactor; resuming operations at the Rocky Flats plant; ensuring the safety of the nuclear weapons stockpile; and effectively managing the task of cleaning up the Department of Energy complex—have not changed; they remain major challenges. The Department of Energy also has other challenges—the need to select a site and technology for the new production reactor and the need to streamline and modernize the complex.

The purpose of today's hearing is to examine the Department's progress in these and other areas and to review the Department's fiscal years 1992–1993 and future year budget requests in the national security area.

The long-term future of the Department of Energy complex is certainly a continuing focus and a concern to the committee. We welcome the Department's much awaited Complex Reconfiguration Study, but note that the report indicates that this will be a long process, possibly taking 20 years or more to complete. This report, however, is only the first step in planning for the future. Consistent with the National Environmental Policy Act, we hope that the Department considers interim actions, as contemplated in the Reconfiguration Study.

This committee has worked diligently in the past to have the Department focus on the future, having first required a modernization report in the National Defense Authorization Act for Fiscal Years 1988 and 1989. This committee has also worked to see a new production reactor in operation in the near future, so that the aged Savannah River reactors can be retired.

The committee has also worked with the Department to provide flexibility to hire needed experts and to provide special pay as well as waiver of dual compensation. After we joined together and fought hard for 2 years to get this enacted, I was disappointed to learn that the Office of Personnel Management has established very restrictive rules to implement this legislation that considerably diminishes its usefulness to the Department.

Historically, the committee has always worked to ensure the safety and reliability of the nuclear weapons stockpile. In the near future, Senator Exon, Chairman of the Subcommittee on Strategic Forces and Nuclear Deterrence, will be holding hearings to examine the issue in more detail. Of particular interest is the relationship between testing and safety, the possibility of pit reuse, and stockpile improvements and replacement.

This committee will also conduct a hearing on the Strategic Environmental Research and Development Program. Admiral Watkins, we appreciate your key role in getting the program underway and your continuing support. We will be asking Under Secretary Tuck to testify at a hearing now scheduled for May 14.

Another concern is funding for environmental restoration and waste management activities and the Department's efforts in this area. This committee has consistently increased the amount of funding for this program due to the fact that the budget requests for these activities were inadequate to meet the requirements. As a result, this portion of the Department of Energy's budget has grown from $1.4 billion in fiscal year 1990 to $2.7 billion in fiscal year 1991. In the current request, the Department has sought $3.7 billion in fiscal year 1992 and just over $4 billion in fiscal year 1993. I applaud this emphasis but we will need to look at the overall management of the program.

A February 1991 study prepared by the Office of Technology Assessment, at the committee's request, raised a number of troubling issues that indicate that the Department is far from having its arms around the cleanup and waste management problems. Senator Exon will be chairing a hearing on this subject.

Admiral Watkins, your task remains daunting, but in the 2 years since you took the helm you have made great strides in instituting a new management structure. You have also addressed, head on, with much success, the many difficult issues facing the Department of Energy, some of which are among the most complex we have. You are to be commended for your progress, your candor, and your dedication to completing the tasks.

Admiral Watkins, I also want to compliment one of your labs—Sandia National Laboratory—for their excellent technical work assisting the committee in its investigation of the U.S.S. *Iowa* explosion.

Senator **Nunn**. The only thing I would like to bring up briefly is that we have before us Senate Resolution 97, a resolution to honor Reserve and Guard personnel for their outstanding efforts on behalf of Operation Desert Storm, sponsored by Senator Domenici and 51 other Senators. We have made slight amendments to it that I think everybody on both sides would agree to. I would like to go ahead and move this one out of here, if we can, and we can poll the additional members. So I would ask for a vote on that very quickly, if we could get it.

Senator **Exon**. Do we have to wait for a quorum or would you like to vote now on that?

Chairman **Nunn**. Well, I would like to start and have a vote, and we can let everybody be polled later on.

Senator **Exon**. Is there any objection by any of the Senators here present to the proposition offered by the Chairman? [No response]

Senator **Exon**. Hearing none, the motion is passed unanimously. Do you want a rollcall vote?

Chairman **Nunn**. No, I'll just let everybody be recorded later today.

Senator **Exon**. And with the understanding that any other members of the committee not present for the voice vote would have an opportunity to so record their vote for or against, pending the close of activities today or the recess of the Senate.

Without further ado, then, we welcome you, Mr. Secretary. Please proceed with your presentation.

STATEMENT OF HON. JAMES D. WATKINS, SECRETARY OF ENERGY; ACCOMPANIED BY MR. RICHARD A. CLAYTOR, ASSISTANT SECRETARY FOR DEFENSE PROGRAMS, DEPARTMENT OF ENERGY, AND MR. LEO P. DUFFY, DIRECTOR, OFFICE OF ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT, DEPARTMENT OF ENERGY

Secretary **Watkins**. Thank you very much, Mr. Chairman. It is an honor to be back to the committee again to discuss national security programs under the so-called 050, Atomic Energy Defense Activities Account. Before I proceed with my oral statement, Mr. Chairman, I would like to have my lengthy written statement entered for the record, the statement that I submitted to the committee a few days ago.

Senator **Exon**. Without objection, it will be.

Secretary **Watkins**. As you may know, Mr. Chairman, programs in this category are administered by multiple organizations in the Department, including the Offices of Defense Programs—and I have Assistant Secretary Richard Claytor with me today, on my left—Environmental Restoration and Waste Management—and I have Mr. Leo Duffy here, the Director of that program, on my right—New Production Reactors, Naval Reactors Program under the Office of Nuclear Energy, Security Affairs, Security Evaluations under the Assistant Secretary for Environment, Safety and Health, and the Office of Intelligence. I have each of the appropriate Assistant Secretaries with me today in the event we need to call them forward.

Before I continue, I would like to thank the members of the committee and particularly Chairman Nunn and Senators Warner, Exon, and Thurmond for your continued support, most recently for the Department's $623 million fiscal year 1991 supplemental, which was signed recently by the President.

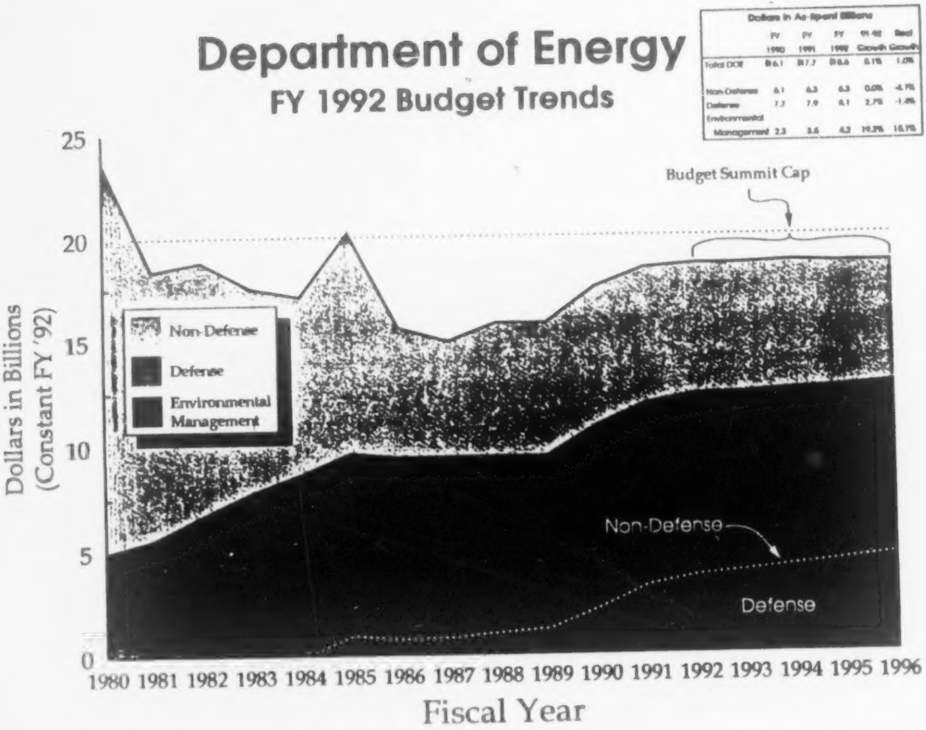
The supplemental funds will be used to assure that all necessary safety, security, and environmental steps are taken to permit the resumption of plutonium manufacturing operations at the Rocky Flats Plant and for several high priority environmental restoration and waste management activities. Your support has been a critical ingredient in helping me to change the course at the Department of Energy.

My written statement highlights our budget request, and I will focus now on a few of the top priorities and give you my views on the year ahead. This is a very important year for the Department. We are at a critical point where many of the initiatives which began 2 years ago are nearing completion.

During 1991, my priority goals for the national security programs at the Department are: (1) to conduct safe restart of a Savannah River reactor; (2) resume plutonium operations at Rocky Flats; (3) conduct the safe start of a test program at the Waste Isolation Pilot Plant in New Mexico; (4) resolve the safety concerns at the Hanford waste tanks; (5) issue a record of decision for the New Production Reactor program; (6) make significant progress in improving the safety and security of the weapons stockpile; and (7) continue the efforts to enhance the safeguards and security protection of our facilities, materials, weapons, and information.

The fiscal year 1992 budget we have submitted is a bare minimum to support our national security programs. To arrive at this budget, it has been necessary to defer critical activities, make cuts in our weapons production and R&D programs, and adopt a single reactor strategy for our New Production Reactor capacity to replace our aging Savannah River reactors. This is a significant departure from the duality concept that we had heretofore been proposing.

In fiscal year 1993 and beyond, the problem becomes even more severe.



Dollars in As-Spent Billions

	FY 1990	FY 1991	FY 1992	91-92 Growth	Real Growth
Total DOE	$16.1	$17.7	$18.6	5.1%	1.0%
Non-Defense	6.1	6.3	6.3	0.0%	-4.1%
Defense	7.7	7.9	8.1	2.7%	-1.4%
Environmental Management	2.3	3.6	4.3	19.2%	15.1%

Secretary Watkins. I brought a chart with me today. I have a large one for the easel, but you also have been given it as a handout in smaller form.

I think it is important that we understand the serious projected ramifications of fiscal year 1993 and beyond, and I think it is important as we discuss the fiscal year 1992 budget.

You can see on this chart a plot of billions of dollars in constant fiscal year 1992 dollars that the Department has spent over the years, from fiscal year 1980, and then projected to fiscal year 1996. It is divided into the three categories: non-defense in green; defense in blue; and the new and emerging environmental restoration and waste management in red. In the latter case, you can see the breakout between defense activities and non-defense activities, the preponderance, of course, being in the defense area.

In the upper right is a chart which gives you a feel for the total Department of Energy budget growth, as opposed to the various elements broken down into these three categories. I think it is very important to note that the non-defense and defense areas, less environmental management, account for (—)4.1 percent and (—)1.4 percent real growth respectively, with a 15 percent growth in the Environmental Restoration and Waste Management Account for fiscal year 1991 to fiscal year 1992. Now, all of that is, in the latter case, good news. That is to say, we have a major problem in environmental restoration and waste management, and obviously we must comply with the law.

Twenty-seven of our activities did not fully meet the spirit of environmental laws, and we are working to correct these problems.

Additionally, to set the pace for environmental compliance, we have entered into a variety of agreements that will total by the end of this year some 83 between our States, the Department of Energy, and the Environmental Protection Agency. So it is a very important part of our budget.

On the other hand, under the budget reconciliation procedures last year, the so-called Budget Summit Cap, you can see what happens in the out-years, which is shown in the top black line.

That is a very deleterious projection, from my point of view, for fiscal year 1993 and beyond. I don't know how we are going to handle that. I don't think anybody in the Federal Government at this time knows what the out-year projections really are going to be, and it makes it very difficult for us to look ahead to know exactly what programs are going to have to be slashed to handle that. But certainly the fiscal year 1993 budget deliberations here on the Hill will be fascinating.

I think what we are seeing in that is a mound of growth underneath, squeezing the other elements of the Department of Energy budget, and we are seeing the first signs of some of the erosion of those programs this year.

I am very concerned about the long-range laboratory outlook for our scientific R&D, which usually takes heavy cuts. In what I would call some of the pork issues that we addressed here in the last minutes of last year's session of Congress, we lost $141 million out of research. These are the kinds of things that really worry me as we go into fiscal year 1993. So I am just alerting the committee that if we think this year is tough, wait until next year.

I am very, very concerned that in the defense area, in particular, we are going to see a continuing decline, perhaps even greater than (—)1.4 percent real growth. This is why the reconfiguration study is so important. This is why we have all of the variety of Environmental Impact Statements (EIS) that we are doing. This is why we made the decision on the New Production Reactor and the like.

So, we are concerned that, while we have been able to accommodate the budget summit strictures in fiscal year 1992, we are on the margin. The out-years will be serious years for us in terms of cutbacks of long-term projects, which will keep growing as the research begins to tell us what we ought to be doing in a number of areas. Major initiatives, such as New Production Reactors, Reconfiguration of the Weapons Complex, and others, then become problematic in the out-years.

I am certain that the budgetary requirements of the Environmental Restoration and Waste Management effort will expand as environmental compliance and clean-up becomes better defined. That is why I am very uncomfortable with the trends that are shown on the chart.

Now, returning to the current year, it is vitally important that Savannah River and Rocky Flats resume operations in order for the Department of Energy to meet national defense requirements. This is particularly important in view of the critical role these facilities have in the maintenance of our existing nuclear weapons stockpile and in improving the safety and security of the stockpile.

SAVANNAH RIVER

The committee is more than aware of the history of our present effort to restart the Savannah River reactors. I have decided to continue to operate the K-Reactor, defer until later the operation of the L-Reactor, putting it on about a 12-month notice, and defer indefinitely the P-Reactor.

The K-Reactor can be ready for operation this summer if important milestones are achieved, including: the safety upgrades as outlined in the Safety Evaluation Report; operational readiness review that is currently underway and will have to be conducted independently by both the contractor and the Department of Energy, and overseen by the Defense Nuclear Facilities Safety Board (DNFSB) before restart; an action plan for mitigation of any environmental impacts associated with the restart; and completion of system testing.

ROCKY FLATS

We also plan to be ready to resume safe operations at the Rocky Flats site this year. If all goes according to plan, this summer I expect to authorize resumption of the operations in the analytical laboratory, Building 559, at Rocky Flats. Although the laboratory is not a production facility, I believe it is prudent to use start-up of the laboratory as a critical verification tool for all other follow-on buildings at the plant. I expect that pit fabrication at Rocky Flats will resume later this calendar year.

Senator Wirth talked about the rush to restart. I think a 2-year shutdown is probably not rushing. Certainly, we have no intention of violating laws or any safety parameters at any of the buildings, or we will not start.

These and other milestones must be successfully completed, and I must be personally assured that applicable environmental, safety, health, and security considerations have been fully addressed before I will authorize the restart of the Savannah River reactor or resume operations at Rocky Flats. This will obviously be overseen by a number of oversight boards, including the congressionally directed Defense Nuclear Facilities Safety Board, now in full operation and well equipped to oversee objectively these activities.

SAFETY AND SECURITY OF THE WEAPONS STOCKPILE

As to current and future safety and security of the weapons stockpile, I have reviewed in detail the recommendations which the Drell Panel has made to Congress. Both Secretary Cheney and I support the thrust and the intent of the Drell Panel's recommendations, and we have charged the Nuclear Weapons Council (NWC) earlier this month to carry out promptly a course of action to deal with each of these recommendations.

WASTE ISOLATION PILOT PLANT

We are scheduled to conduct safe start of the operational research test phase for the Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico, this summer. This is the Nation's first geologic repository, and it is essentially completed.

In the next 5 years, the R&D test program will validate the emplacement of transuranic waste to ensure that the Nation can safely dispose of this material. The ultimate opening of this facility is the essential component of achieving final disposal of the Nation's transuranic waste. This will be the first repository in the world.

As you know, we are moving with the House of Representatives right now to try to encourage them to rapidly move a land withdrawal bill. We prefer legislative land withdrawal for the Waste Isolation Pilot Plant. Besides some uncertainties that might come out of external oversight groups, as we finally close in on the last few days of readiness for start-up, the long pole in the tent is legislative land withdrawal.

So I would ask this committee, when we move it through the House of Representatives—and I believe that will take place with everyone dedicated to that objective—to help us move it quickly through the Senate so that we will not delay further the start-up of this very important facility.

WASTE TANKS AT HANFORD

We will resolve the safety and security concerns related to the waste tanks at Hanford as well. The Department has several long-range R&D projects underway to develop chemical extraction technologies to divide the waste into separate components which can then be individually identified for possible treatment options. Once the waste is separated, it is anticipated that this will eliminate the previously identified safety problems. Then the waste could be handled and disposed of in a safe and environmentally acceptable manner.

I believe that we have our arms around this problem now. We have the proper oversight in place. We have the proper safety practices, the proper monitoring going on. In the interim, I do not see any threat to the local population.

I think some of this alerting to the Department of Energy should have been picked up from Senator Glenn some years ago. We picked it up late. We've got it under control now, and I think all indications are, by not only ourselves but everybody else monitoring this program very closely, that we do, in fact, have it under control.

RECONFIGURATION OF THE NUCLEAR WEAPONS COMPLEX

Those items are of importance today. But, equally important is to assure that our future nuclear weapons complex can meet future national security requirements. In 1989, I directed that a plan be developed for reconfiguration of the nuclear weapons complex to assure that a safe, reliable, and efficient complex is available over the long-term to support the nuclear deterrent.

In February, I released the Nuclear Weapons Complex Reconfiguration Study to the public and provided individual copies to the members of this committee, as was noted earlier. We are now conducting a 3-year in-depth examination of the proposals contained in the study consistent with the requirements of the National Environmental Policy Act (NEPA). Four public hearings have been held, in fact, one as recently as yesterday near the Pinellas Plant in Florida.

The Department's plans for reconfiguration of the complex will require substantial resources at a time of significant Federal budget constraints. At the same time, significant resources must be devoted to maintaining the present complex and assuring it can carry out its production mission with the required attention to health, safety, and the environment. Providing the funding for transition and reconfiguration is necessary to ensure continued viability of our nuclear deterrent now and into the future. This is the way our budget has been prepared—labeled Complex 21, with a transition mode to accomplish these objectives.

NEW PRODUCTION REACTORS (NPR) PROGRAM

A key component of the future nuclear weapons complex will be the ability to produce in a safe and environmentally acceptable manner the tritium that is necessary to assure continued effectiveness of our nuclear deterrent.

The mission of the New Production Reactor Program (NPR) is to provide, on an urgent schedule, a New Production Reactor. Future defense nuclear materials production cannot be met indefinitely with our present reactors, according to all of the best engineering advice that we can bring to bear on the subject. The fact that these reactors will be over 45 years old when new reactor capacity is scheduled to begin production, does not bode well for these reactors to be the long-term answer to tritium production.

Because of the budget summit agreement limitations, I have had to revise our dual strategy for this program. My new strategy is to continue the preliminary designs of both the heavy water reactor and the modular high temperature gas cooled reactor, to complete the final environmental impact statement in November 1991, and then to make a final choice with the Record Of Decision (ROD) in December 1991. At that time, the Department will select one technology and one site, utilizing all safety, environmental, security, technical, cost, and schedule data needed to make the most sound and complete decision possible. Then, we will proceed to complete the design and construction of a single reactor technology at the chosen site. The design of the technology not selected will be terminated in an orderly fashion. As a contingency, the light water reactor target development effort will continue until its completion.

NEW STRATEGY

I want now to highlight for you a few of the recent major management initiatives that I have directed within the Department that will allow us to do the job of managing better and more efficiently.

First, this Department is responsible to ensure the safeguarding of facilities, weapons, materials, and information. Our facilities currently spend over $1 billion each year to maintain compliance with security requirements. Recently, I established a task force to conduct a thorough review of safeguards and security activities of the Department necessary to assure the protection of facilities, weapons, materials, and information. One of the recommendations was to segregate policy development from line management. I, therefore, directed a reassignment of the security affairs policy functions from the Office of Assistant Secretary for Defense Programs to a new Office of Security Affairs, reporting directly to the Under Secretary. This change was effective on April 1. This was done in order to improve the Department's policy-making aspects for safeguards and security, which cross-cut several Department activities, as well as Defense Programs.

Second, I recently announced an Interim Final Rule to enhance the performance and increase the accountability of our management and operating contractors, and to restructure the award fee system to provide incentives for improved performance, including financial management. The Interim Final Rule will hold the Department's profit-making contractors, rather than the government, responsible for costs that could have been avoided by proper contractor performance. In their recent 5-year contract extension, Martin Marietta Energy Systems has substantially agreed to the provisions of the Interim Final Rule. We anticipate reaching similar agreements with all of our other major M&O contractors as the contracts come up for renewal.

Third, I am committed to further improvements in worker safety and health. A year ago, I requested a comprehensive evaluation of the workplace safety deficiencies found during our 18 Tiger Team compliance appraisals. The findings of the report recently released by the Department of Labor were significant, and in response I directed that a series of actions take place to rebuild our existing programs. These include a prompt survey of internal and contractor line programs to administer and oversee workplace safety; expanding the role of self-assessment programs to include occupational safety and health; modifying all cost-plus award fee determinations to address the area; and strengthening independent oversight.

In closing, I want to reiterate the dilemma I faced regarding budget decisions for the Atomic Energy Defense Activities Program. I believe the Department's fiscal year 1992 budget is the rock bottom amount required to support our national security programs in a safe and environmentally sound manner. We have provided for restart of only one reactor at Savannah River, terminated the NPR two-reactor strategy, reduced critical laboratory personnel employment dedicated to maintaining nuclear weapons competence, limited important underground nuclear testing to the lowest level since the testing moratorium in the 1960s, and continued to defer important maintenance and facility upgrades throughout the weapons complex.

I do not believe it prudent to continue to make further reductions in critical programmatic activities that support our national security. I need this committee's support so that I can fulfill our mission of providing appropriate programs to ensure a vital nuclear deterrent for this Nation. Thank you, Mr. Chairman. I will open myself up for questions.

[The prepared statement of Secretary Watkins follows:]

PREPARED STATEMENT BY ADM. JAMES D. WATKINS, USN (RET.), SECRETARY OF ENERGY

Mr. Chairman and members of the committee, I am pleased to appear before you today to present an overview of the Department of Energy's fiscal year 1992 budget request for those national security programs funded by the 050 Atomic Energy Defense Activities Account. Programs in this category are administered by the Offices of Defense Programs; Environmental Restoration and Waste Management; New Production Reactors; Naval Reactors Program under the Office of Nuclear Energy; Security Affairs; Security Evaluations under the Assistant Secretary for Environment, Safety and Health; and Intelligence.

Before I continue, I would like to thank the members of the committee for your support of the Department's $623 million fiscal year 1991 Supplemental Authorization request. These funds will be used to assure that all necessary safety, security, and environmental steps are taken to permit the resumption of plutonium manufacturing operations at Rocky Flats Plant, and for several high priority Environmental Restoration and Waste Management activities. Your continued support is an important ingredient in helping me change the course at the Department of Energy. As new dimensions take shape—sounder environmental stewardship, downsizing the production complex, and assuring the construction of new production reactor for the 21st century—I look forward to working with you to secure the necessary resources and support to carry out effectively and completely the vitally important national security missions of the Department of Energy.

OVERVIEW

Nuclear deterrence has been the cornerstone of our national security policy since the end of World War II. It has been essential in preserving world peace and will remain a vital element of our national defense strategy for the foreseeable future. This is not to say that the world situation has not changed since I became Secretary of Energy. Rather, we find that nuclear stockpiles in Europe are being reduced and arms control treaties with the Soviet Union offer the promise of further reductions in nuclear weapons. Regardless of that future promise, the number and mix of nuclear weapons in our stockpile are defined in the Nuclear Weapons Stockpile Memorandum, which is negotiated between the Departments of Defense and Energy, approved by Secretary Cheney and me, and then forwarded to the President for final approval. Irrespective of ultimate stockpile requirements, Federal budgets will be increasingly constrained, a trend that can be expected to continue. These and other impacts on the Department's national security programs are profound and must be considered as we position ourselves to move into the 21st century.

The Department's overall Atomic Energy Defense Activities budget request for fiscal year 1992 is $11.8 billion, almost two-thirds of the Department's total budget. The request is comprised of $6.75 billion for Defense Programs which includes $159 million for Security Affairs, and $50 million for Intelligence; $3.7 billion for Environmental Restoration and Waste Management activities; $500 million for the New Production Reactors Program; $801 million for the Naval Reactors program; and $15 million for Security Evaluations.

Since the submission of the President's fiscal year 1992 budget, the Department of Defense has decided not to fund the B-90 weapons system production activities in fiscal year 1992. We are working closely with cognizant congressional staffs to allow DOE funding in fiscal year 1992 for this weapons system to be reallocated to high priority needs such as the W-79 change requirement recently validated by the Secretary of Defense, support for an expanded nuclear weapon disposal capability at Pantex to handle increased weapon retirements, and other priority funding of Weapons Production and Surveillance requirements.

I will describe my objectives for the programs comprising DOE's portion of the 050 account and the immediate concerns I see facing the Department of Energy. During 1991, my priority goals under the Atomic Energy Defense Activities Account are to achieve the following:

— Conduct safe restart of the first production reactor at the Savannah River Site in South Carolina after a nearly 3-year shutdown for safety deficiencies.

— Conduct safe resumption of plutonium processing operations at the Rocky Flats plant in Colorado after a more than 1-year shut-down for significant operational weaknesses.

— Conduct safe start of the operational research test program at the Waste Isolation Pilot Plant (WIPP) in New Mexico to demonstrate compliance with disposal requirements for radioactive transuranic wastes.

— Resolve the safety concerns related to the waste tanks at the Hanford site in Washington State.

— Issue the Record of Decision for New Production Reactor capacity in December.

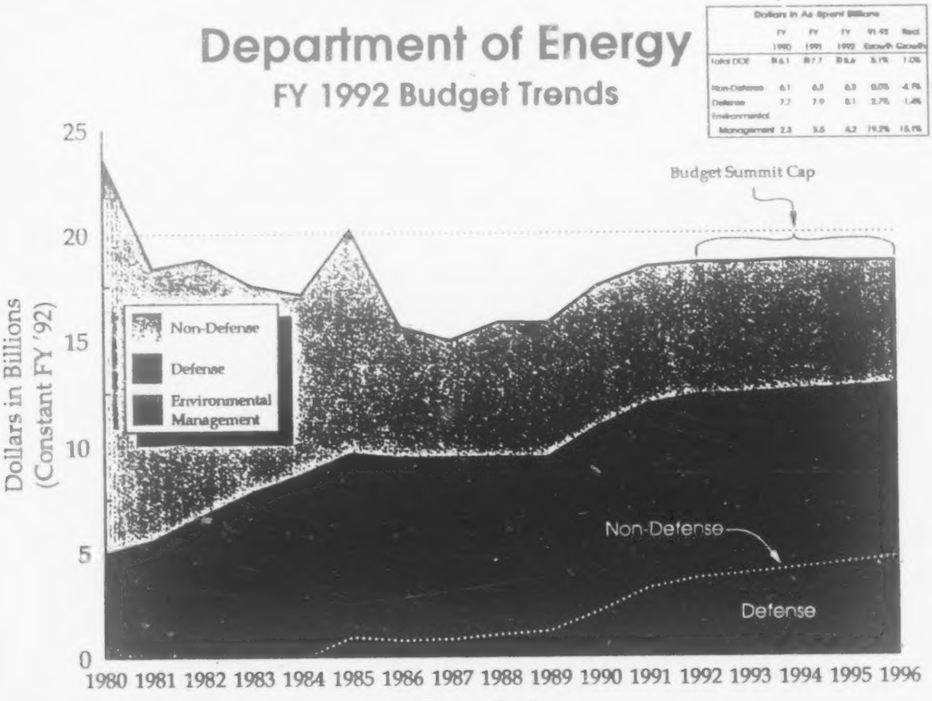
— Continue to make significant progress in improving the safety, security, control, and effectiveness of our nuclear weapons stockpile.

— Continue efforts at Headquarters and each DOE facility to implement recommendations of the Secretary's Safeguards and Security Task Force, which I commissioned, and other initiatives to enhance protection of facilities, special nuclear materials, nuclear weapons and their component parts, and classified information.

As I noted earlier, this is an important year for the Department. It has not been easy getting to this point. I want to share with you the dilemma I faced regarding decisions for the Atomic Energy Defense Activities programs.

I believe the Department's budget, including the fiscal year 1991 supplemental, is the rock bottom amount required to support our national security programs in a safe and environmentally sound manner. This budget was arrived at only after much soul searching that included the deferral of many critical activities and severe cuts in our weapons production complex, in our weapons research and development program, and in our program to pursue new production reactor capacity to replace our aging reactors.

The following chart depicts the current problem facing the Department in balancing all of its national security activities.



This growth in resources allocated to environmental management is of particular concern to me since there are a significant number of uncertainties still confronting the Department as it strives to meet the requirements of applicable environmental statutes. Most of our sites are still in the characterization phase where problems are still being identified and proposed solutions studied. Once the study phase is over, we can anticipate further cost increases as the actual clean-up work begins on schedules with statutory milestones. Another contributor to the uncertainty of the costs associated with achieving compliance with environmental laws is the increasing number of compliance agreements we are negotiating with the States and the Environmental Protection Agency. When setting the requirements in these agreements, there is no incentive for the regulators to demand less than full compliance, as soon as possible, regardless of the degree of risk associated with any non-compliance condition that may develop. And their position is being supported through litigation. This situation puts the Department in a difficult position from the standpoint of controlling budgetary growth, since these resource requirements are driven, to a great degree, by our regulators.

I am certain that the budgetary requirements for the Environmental Restoration and Waste Management effort will expand as environmental compliance and cleanup becomes better defined. That is why I am very uncomfortable with the trends that are portrayed on the chart.

STATUS OF THE NUCLEAR WEAPONS COMPLEX

Over the past 2 years as Secretary of Energy, one of my key concerns has been correcting the problems brought about by past neglect in the management of the Department's nuclear weapons complex. As a result of my Ten Point Plan, issued in June 1989, to move the Department toward full accountability and compliance with environmental, safety, and health laws, we have made good progress toward achieving our objectives.

From the onset, it was clear that instilling a new operating culture would take time and that new challenges and changing circumstances would require revisions to planned timetables. Nevertheless, we have made real and measurable progress in implementing new operating policies and procedures to bring the Department into compliance with Federal and State environmental, health, and safety regulations. Achieving both production and environmental, safety, and security objectives are compatible goals.

Operations at the Savannah River Site and Rocky Flats Plant will not resume until I am completely satisfied that they can be operated in a manner that assures the health and safety of the public and our workers, protects the environment, and complies with the Department's safeguards and security requirements. I will not be driven by rigid schedules. Furthermore, I remain committed to correcting existing deficiencies. The programs we have in place are sound. I am optimistic about our ability to achieve these goals in 1991.

SAVANNAH RIVER REACTORS

On February 4, 1991, I signed the Record of Decision (ROD), completing the National Environmental Policy Act (NEPA) process, which reflects my decision to continue to operate the K Reactor at the Savannah River site, defer until later the operation of the L Reactor, and defer indefinitely the operation of the P Reactor.

Important milestones must still be achieved before the K Reactor can be ready for operation this summer, including: continuing with the safety upgrades as outlined in the Safety Evaluation Report; preparing for an Operational Readiness Review prior to a decision to restart; preparing an action plan for mitigation of any environmental impacts associated with the restart; completing system testing and security reviews. These and other milestones must be successfully completed; and I must be personally assured that applicable environmental, safety, health, and security considerations have been satisfied before I will authorize the restart.

PLUTONIUM OPERATIONS AT ROCKY FLATS PLANT

Also, this summer, I expect to authorize resumption of operations in the analytical laboratory, Building 559, at Rocky Flats. Although the laboratory is not a production facility, I believe it is prudent to use start-up of the laboratory as a critical verification tool for other buildings at the plant.

But again, I will not authorize resumption at Rocky Flats until I am personally satisfied that applicable environment, safety, health, and security considerations have been fully addressed. If all goes according to plan, I expect that pit fabrication at Rocky Flats will resume later this calendar year.

As you know, it is vitally important that Savannah River and Rocky Flats resume operations in order to meet national defense requirements. This is especially important in view of the critical role these facilities have in the maintenance of our existing nuclear weapons stockpile and in improving the safety and security of the future stockpile.

NUCLEAR WEAPONS SAFETY

I have reviewed in detail the recommendations which the Drell Panel has made to Congress regarding the safety of nuclear weapons in the stockpile. Both Secretary Cheney and I support the thrust and intent of the Drell Panel's recommendations, and we have charged the Nuclear Weapons Council to carry out promptly a course of action to deal with these recommendations.

ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

The Department is committed to managing its facilities in an environmentally sound manner, restoring environmentally damaged sites, promoting environment, safety and health oversight, and safely disposing of nuclear waste. Environmental Restoration and Waste Management (EM) is the fastest growing program area in the Department. My Five-Year Clean-up Plan is the cornerstone of the Department's long-term strategy to consolidate and coordinate the Department's clean-up activities. The fiscal year 1992 EM budget request contains $3.7 billion being proposed under the Atomic Energy Defense Activities appropriation. This is an increase of approximately $1 billion over the fiscal year 1991 appropriation.

In order to clearly define the future course of this program, I have directed that a Programmatic Environmental Impact Statement (PEIS) be prepared for the Department's Environmental Restoration and Waste Management activities. Twenty-three public scoping hearings related to this PEIS were conducted throughout the country. Let me emphasize that this effort must be maintained independent of the PEIS for Complex Reconfiguration. The missions of these two programs are significantly different. Although future complex operations will generate additional waste for disposal, these volumes will be relatively small when compared to the large amount that already exists in the complex and must be managed under rigid regulations. These two efforts will be thoroughly coordinated to assure consistency, but they must be independently maintained.

Implementation of the Environmental Restoration and Waste Management program is indicative of our determination to manage the Department complex in an environmentally acceptable manner. There are sound reasons for the requested approximate $1 billion program growth. Constraints on the 050 account dictate that we closely examine future program requirements, but the challenges are significant. For instance, in the process of validating requirements, we cut approximately $1 billion from preliminary program estimates that came in from field activities and were fed into the Five Year planning information. In addition, closure of facilities and the transfer of activities from other programs represented approximately $700 million worth of real EM requirements. The infrastructure necessary to manage this program must be expanded to assure that appropriate controls are in place to effectively expand this level of funding. In 1992, the amount of real growth in this program in the defense area is only about 11 percent.

Part of this real growth is driven by the significant increase in the number of compliance agreements negotiated with the States and the Environmental Protection Agency. At the end of fiscal year 1990, 59 such agreements were in place; at the end of 1991, this number will increase to 82 with even more anticipated by the end of fiscal year 1992. However, there is considerable uncertainty associated with negotiating the requirements of some of our agreements. A major contributor to this uncertainty is the fact that the Resource Conservation and Recovery Act (RCRA), which governs many of these agreements, was not written to provide specifically for mixed waste. Mixed waste is generically defined as having both radioactive and hazardous waste present and constitutes the major portion of the material in the Department complex. Therefore, the uncertainties of the regulatory requirements are of particular concern. It is essential that this situation be remedied during the current RCRA reauthorization process so that the Department can focus its attention on a consistent clean-up program.

I am particularly pleased with our efforts in starting to manage the significant volume of Department waste and in minimizing current waste generation, as well as achieving parallel progress in environmental restoration. The Nation's first geologic repository, the Waste Isolation Pilot Project or WIPP, is essentially completed. The test phase for the facility is scheduled to begin in June or July of this year. The ultimate opening of this facility is the essential component in achieving final disposal of the Nation's transuranic waste. Another major step forward in waste management is the testing of the Defense Waste Processing Facility at Savannah River. This facility, which is currently in the cold operations phase, is a major link in the program designed to accomplish the ultimate disposal of the large volume of high level waste that is currently stored in underground tanks at Savannah River.

In the area of environmental restoration, we are starting to make a dent in the substantial clean-up task that confronts us. Remedial assessments and major closures are proceeding on schedule. For example, to date, we have met 78 of 82 major compliance agreement related milestones in the Hanford Tri Party Agreement. Significant volumes of contaminated materials have been removed from Grand Junction and Rocky Flats in Colorado and the Hanford solar basins. We have completed decontamination and decommissioning at the Los Alamos reactor facilities and at a number of hot cells and buildings throughout the Department complex. The technology development activity in EM stated that we would initially try to come up with faster, better, safer, and cheaper ways to accomplish the clean-up tasks. The Integrated Demonstration at Savannah River for treating ground water has been our first unqualified success. The initial test removed 15,000 pounds of trichloroethylene in 75 days in comparison to the existing system of pump, strip, and treat that removed 15,000 pounds of trichlorethylene in 2½ years at a cost of $54 million compared with a cost of $3½ million for the integrated demonstration.

Sustained progress in the area of environmental restoration and waste management is essential if the Department is going to continue to exhibit environmental responsibility. I am certain that the budgetary requirements for this program will continue to be assessed as the task of environmental compliance becomes better defined, unique special nuclear materials throughout the complex are classified as wastes, and additional facilities are removed from service. We need to develop new requirements allowing the recycle of old material for use in new construction projects. If implemented, the new requirements for recycle have the potential to reduce both the amount of waste requiring disposal and overall program costs.

RECONFIGURATION OF THE NUCLEAR WEAPONS COMPLEX

To assure that our nuclear weapons complex can meet future national security requirements, I directed that a plan be developed for reconfiguration of the nuclear weapons complex to assure that a safe, reliable, and efficient complex is available over the long term to support the nuclear deterrent. On February 7, 1991, I released to the public the Nuclear Weapons Complex Reconfiguration Study and provided individual copies to the members of this committee. I am convinced that the Department's mission to produce defense materials is compatible with protection of the environment; one need not be sacrificed to obtain the other. This plan is the first step in bringing that about. We are now conducting an indepth examination of the proposals contained in the study, beginning with the preparation of a Programmatic Environmental Impact Statement (PEIS). The firm of Tetra Tech Inc., of Pasadena, California, has been selected to support the Department in the preparation of the PEIS. Public participation is encouraged in the public scoping meetings now under way near each of the major DOE sites, here in Washington, and when we publish the draft PEIS scheduled for November 1992. Three such meetings have been held to date and a fourth meeting is scheduled this week near the Department's Pinellas Plant in Florida.

The PEIS will examine a number of options, ranging from no action to a restructuring that could reduce the complex from its present 13 sites to 6 or 7. Preferred options include relocating the Rocky Flats Plant to a new facility employing improved technology to minimize environmental and health impacts while facilitating economy of operation. Also preferred is consolidating non-nuclear manufacturing activities at one dedicated site. Other possible changes include transferring many non-nuclear manufacturing activities to the private sector; decommissioning at least one facility entirely; and examining the missions, facilities, and operations of the three research and development laboratories for changes that could result in satisfying essential weapons requirements while streamlining research, development, and testing facilities.

The Department's plans for reconfiguration of the complex will require substantial resources at a time of significant Federal budget constraints. In the meantime, significant resources must be devoted to maintaining the present complex and assuring it can carry out its production mission with required attention to health, safety, security, and the environment. Providing the funding for transition and reconfiguration is considered necessary to ensure continued viability of our nuclear deterrent.

NEW PRODUCTION REACTORS PROGRAM

The mission of the New Production Reactors (NPR) Program is to provide, on an urgent schedule, new production reactor capacity in a safe and environmentally sound manner for an assured supply of nuclear materials, primarily tritium, to maintain the Nation's deterrent capability. Future defense nuclear materials production cannot be met indefinitely with our present reactor capacity, which will be over 45 years old when new reactor capacity is scheduled to begin production. The ability to produce tritium is a critical component to fulfilling and sustaining this Nation's defense policy of nuclear deterrence. The proposed, state-of-the-art, new production reactor would provide, on an urgent schedule, the means necessary for the reliable production of tritium in a safe and environmentally sound manner well into the next century.

To achieve this objective, I have decided that the former strategy of concurrently designing and constructing two new production reactors at two sites can no longer be supported given the multiple competing priorities within the Atomic Energy Defense Activities Account. My new strategy, as outlined in our fiscal year 1992 budget request, is to continue the preliminary designs of both the Heavy Water Reactor and the Modular High-Temperature Gas-Cooled Reactor, complete the final Environmental Impact Statement in November 1991, and then make a final choice at the Record of Decision in December 1991. At that time, the Department will select one technology and one site, utilizing all safety, environmental, technical, and cost and schedule data needed to make the most sound and complete decision possible. Then, depending upon the decision, we will proceed to complete the design and construction of a single reactor technology at the chosen site. The design of the technology not selected will be terminated in an orderly fashion. As a contingency, the light water reactor target development effort will continue until its completion.

The requested fiscal year 1992 funding level of $500 million for the New Production Reactor Program consists of $152.3 million in operating budget authority; $336.5 million in construction funds for design; and $11.2 million for capital equipment. These funds are needed to support the continued broad range of activities necessary to bring new production reactor capacity on line.

On April 10, 1991, the draft Environmental Impact Statement on the siting, construction and operation of new production reactor capacity was released to Congress. This begins a 60-day public comment period which will end in June. During that time, the Department will conduct 13 public hearings in five States (South Carolina, Georgia, Idaho, Oregon, and Washington) regarding this proposed action. The final EIS is scheduled to be completed in November 1991, with the Record of Decision scheduled for December. In the immediate future, the NPR Program will proceed with those activities necessary to complete the final EIS, concurrently with engineering development, confirmatory testing, and project design efforts. These activities will all lead to supporting detailed design and construction as soon as possible after the Record of Decision.

THE WEAPONS RESEARCH AND DEVELOPMENT LABORATORIES

To meet national security requirements, our National Laboratories at Los Alamos, Lawrence Livermore, and Sandia carry out research, development, and testing of nuclear weapons. They also perform the vital function of monitoring the stockpile to assure continued safety, security, and effectiveness. This core mission has been the technical cornerstone of our nuclear deterrent since its inception with the Manhattan Project. In addition, these laboratories engage in vital research expanding the frontiers of science and technology. They have made substantial contributions in such fields as materials research, chemistry, nuclear physics, solid-state physics, microelectronics, mathematics, and computer science. As testament to this versatility, our weapons laboratories made substantial contributions to Operations Desert Shield and Desert Storm.

Meanwhile, I am very concerned with the downward trend in laboratory staffing which has resulted from increasingly constrained Federal budgets. Since fiscal year 1987, there has been a decline in laboratory personnel dedicated to weapons research, development, and testing of nearly 30 percent; in addition, laboratory employment in this core program is expected to decline by an additional 6 percent during fiscal year 1991, resulting in the loss of approximately 500 additional positions. Moreover, it is anticipated that reductions in the defense budget will also significantly impact the laboratories inasmuch as approximately 25 percent of laboratory funding has been associated with work for others, largely funded by the Department of Defense.

The erosion of laboratory technical capability is a major concern to me. In recognition of this and changing national priorities, I have established a task force under the Secretary of Energy's Advisory Board to develop plans to help me better utilize the intellectual capital in our national laboratories. This task force will review and recommend changes in the roles and responsibilities of these laboratories, while preserving the core mission of weapons research, development, and testing. During the coming year, I expect a report which will provide a framework for utilizing these assets to maximize military and economic security objectives and to meet changing national priorities.

One of those future priorities that our Defense Programs laboratories are actively pursuing is technology transfer. We have worked aggressively to develop an enhanced program to improve the process by which we transfer knowledge from the laboratories and into the economy. We are increasing our funding for technology transfer at our defense laboratories by 60 percent in fiscal year 1992. If the United States is to maintain its competitive edge and remain a leading economic power, we must move quickly to adapt this technical knowledge to our practical needs.

NAVAL REACTORS

Naval Reactors' objectives remain unchanged from last year—they are charged with providing militarily effective Naval nuclear propulsion plants and ensuring their continued safe and reliable operation. Naval Reactors' outstanding safety and environmental record—3,800 reactor-years of operation without a reactor accident or significant impact on the environment—is the most eloquent statement of the tremendous job they're doing.

Naval Reactors' success is the result of hard work, dedication, and a philosophy of personal responsibility for safety, control of radioactivity, and environmental preservation. The fiscal year 1992 request of approximately $801 million supports their "cradle-to-grave" responsibilities for Naval nuclear propulsion and includes such key work efforts as:

— Keeping Advanced Fleet Reactor (AFR) work on-schedule for the *Seawolf* class attack submarine; AFR is planned to be tested in the existing land based S8G prototype plant prior to fleet introduction;

— Maintaining an integrated, comprehensive research and development effort, including work on new plant and reactor equipment concepts and post-AFR reactor development;

— Continuing land-based prototype reactor operations, maintenance, and servicing to ensure an effective testing effort which will meet programmatic needs well into the next century;

— Meeting all environmental, safety, security, and health requirements;

— Ensuring that continued technical excellence and high quality mark all Naval Nuclear Propulsion Program work; and

— Providing enriched materials to meet Naval fuel needs.

Nuclear-powered warships remain an essential investment even in times of defense "belt-tightening"—nuclear attack submarines and surface ships provide unparalleled flexibility in reaching global trouble spots and delivering measured responses, while fleet ballistic missile submarines are the most reliable leg of the strategic defense triad. The nuclear fleet is a cost-effective backbone for the strong Navy we need to protect our maritime interests now and into the 21st century.

INTELLIGENCE

The Department faces daily challenges of a global nature spanning the spectrum from national defense and energy security issues to issues involving nuclear reactor safety and nuclear waste disposal. To meet these challenges, the Department's intelligence element was reorganized in April 1990 with an expanded mission to provide special support over a broader range of issues. The primary missions of the reorganized element are to ensure that the Department's intelligence information requirements are met and to provide specialized DOE intelligence expertise to other elements of the Intelligence Community.

During fiscal year 1990, the Department provided support to the Nation's top intelligence priorities as identified by the President's Foreign Intelligence Priorities Committee. These efforts continue during the current fiscal year.

In addition to ongoing activities, the Department provided support to Operations Desert Shield and Desert Storm in a wide range of areas. Activities included analysis of energy impacts and the potential economic, environmental, and military impacts of the Iraqi use of oil as a defensive weapon. Finally, the Office of Intelligence provided the Joint Chiefs of Staff and Defense Intelligence Agency with assessments of the Iraqi nuclear weapons program and its capabilities.

The fiscal year 1992 request reflects a $8 million increase over the fiscal year 1991 appropriation. The additional funds will provide for: (1) the Department's direct support of the implementation of the Threshold Test Ban Treaty and the Peaceful Nuclear Explosions Treaty; (2) expanded activities in support of Intelligence Community requirements in the areas of nuclear proliferation and U.S. energy security; and (3) increased analysis of international terrorist activities that could affect DOE interests.

SECURITY AFFAIRS

The Department's Safeguards and Security estimate for fiscal year 1992 is $1.1 billion, compared to $1 billion in fiscal year 1991. This total funding is identified in the Department's crosscut estimate, which is a summation of Safeguards and Security items in all the Department's program requests, including the Nuclear Safeguards and Security budget at $96 million and the Security Investigations budget at $62.6 million which I will address separately. The Defense Programs' portion is $908 million in fiscal year 1992, compared to $846 million in fiscal year 1991.

The Department is currently engaged in a massive effort to enhance the safeguards and security posture at Rocky Flats. Physical security upgrades and enhanced nuclear materials control measures are being made to ensure a high confidence that nuclear materials are satisfactorily protected. In addition, we are working to ensure an enhanced security posture at Savannah River, when resumption of operations begin at this facility.

We are making significant progress toward increasing the level of protection of our facilities and the protection of DOE assets. Our ability to mitigate the potential outsider threat remains at an acceptable level at our nuclear weapons facilities. Current efforts are focused in ensuring adequate protection against the potential insider threat. We are making progress, but at a much slower pace than we would like.

The budgets of Nuclear Safeguards and Security and Security Investigations which I mentioned above, address such elements as safeguards and security operations, technology development, international safeguards, classification and technology policy, and security investigations. Through these budgets, the Office of Security Affairs carries out its responsibilities in policy, guidelines, and procedures to prevent the theft of nuclear weapons or materials, the sabotage of Departmental facilities, and the compromise of classified information. The safeguards and security budget request supports increased Headquarters assistance to field operations, while the security investigations request will enable the Department to conduct initial investigations for security clearances for new employees while reducing the backlog of overdue reinvestigations for personnel who currently possess a security clearance.

Last year, I directed that a thorough review be conducted of the safeguards and security activities of the Department necessary to assure the protection of nuclear weapons, materials, and facilities. A task force of uniquely qualified individuals was formed to accomplish this review. The task force issued its report on December 20, 1990. In response to this assessment, I directed the reassignment of the security affairs functions from the Office of the Assistant Secretary for Defense Programs to a new Office of Security Affairs reporting directly to the Under Secretary of Energy, effective April 1, 1991. This was done in order to improve the Department's policy making aspects of safeguards and security, which not only affects Defense programs, but many Departmental programs as well.

Many other initiatives related to actions recommended in this report are underway. Such actions include an Accelerated Access Authorization pilot project designed to significantly reduce processing times for "Q" clearances for contractor employees (from 180 to 40–50 days). This project is focused at Rocky Flats and is being conducted in cooperation with our on-site contractors and early indications are that this voluntary program is being well received by contractor employees. We are also developing a new program designed to dramatically reduce the number of "Q" clearances and increase the access afforded by "L" clearances. This program is currently in the conceptual phase.

Consistent with report recommendations, our classified document control initiatives include new accountability requirements for secret documents. This change will provide adequate and proper control of classified material while reducing the administrative burden.

We have initiated several actions to review and streamline Master Safeguards and Security Agreements (MSSA). For instance, we have initiated a comprehensive review of the MSSA process, and have prepared a draft MSSA Verification Guide and Team Handbook which will assist in standardization of MSSAs across the complex.

The items which I have identified to you today are just a few of the major undertakings which I have directed as a result of the findings in the Task Force Report. I will continue to work with Congress to ensure that the protection of the Department's national security assets continues as one of our highest priorities.

SECURITY EVALUATIONS

Also funded in the Atomic Energy Defense Activities appropriation is the Office of Security Evaluations (OSE) which is responsible for the independent oversight of the Department's safeguards and security activities.

Since I was confirmed as Secretary of Energy I have focused on changing the environment in DOE. A key element of the change is the reorganization I outlined in my Notice SEN 6A. This reorganization unequivocally placed the responsibility for executing and monitoring required environmental, safety, health, and security actions within the technical program offices as a line management function. Additionally, my position is very clear that safety, health, environment, and security activities would not be subordinate to production.

I have also moved OSE from the Assistant Secretary for Defense Programs to the Assistant Secretary for Environment, Safety and Health. OSE acts as the principal focal point for all safeguards and security inspection and evaluation matters and serves as my independent oversight assessing the posture of safeguards and security of the Department of Energy. This function is carried out by conducting inspections at field sites and Headquarters, preparing topical assessments and special studies, and performing other functions as directed.

During fiscal year 1992, OSE's budget request is for $15 million to continue these oversight activities which will include eight comprehensive inspections and 10 short notice reviews.

ADDITIONAL MANAGEMENT IMPROVEMENTS

I would also like to mention recent management improvements I have undertaken to increase staffing, enhance worker health and safety, improve contractor performance, and strengthen the management capability within Defense Programs to address current priorities.

STAFFING

Departmental staffing has increased significantly above the fiscal year 1990 Full Time Equivalent (FTE) usage, and staffing growth for the major Department programs is almost 16 percent above fiscal year 1990 levels. These increases will provide FTEs to staff the critical, high priority workloads in the Department in fiscal year 1992. However, the Department is continuing its comprehensive review of manpower resource requirements, which was begun in fiscal year 1990, to assure the most effective deployment of its limited staffing resources. Enactment last year of legislation containing much desired critical pay and dual compensation provisions promises to us in staffing these positions with men and women who have the skills necessary to perform the required functions. Further legislative changes that would allow highly skilled National Laboratory personnel to rotate into and out of Department service would provide a significant additional source of scientific and technical excellence in the management of the Department's nuclear complex.

WORKER HEALTH AND SAFETY

In the area of worker health and safety, I requested a comprehensive evaluation a year ago in view of the workplace safety deficiencies found during DOE environment, safety, and health "Tiger Team" compliance appraisals at our facilities. The Department of Labor recently released its report entitled, "Evaluation of the Department of Energy's (DOE's) Safety and Health Programs for its Government-Owned and Contractor-Operated Facilities." The findings in this report were significant and, in response, I directed that a series of actions take place to build on our existing programs:

— The existing capability of DOE and contractor line programs to administer and oversee workplace safety effectively will be promptly surveyed; specific recommendations on staffing, equipment and qualifications, and training needs are to be provided within 90 days.

— The role of self-assessment programs in DOE and contractor line operating programs will be expanded to address occupational safety and health.

— All cost-plus-award-fee determinations will address occupational safety and health compliance as an explicit performance element.

— Independent oversight by the Assistant Secretary for Environment, Safety and Health will be strengthened by elevating its OSHA oversight role through the development of revised mission and function statements, and the reallocation of resources required to create a new Office of Occupational Safety Programs. I expect this office to serve as a "technical catalyst" for fostering needed changes in the way the Department approaches workplace safety and health technology and practice.

— On a longer-term basis, I have issued tasking memoranda that prescribe internal assessments to be performed over the next few months to address all of the findings and recommendations contained in the OSHA report.

— Also, DOE orders governing workplace safety and health will be revised within 6 months to correspond more closely to OSHA regulations and these will be used as the basis for considering adoption of DOE occupational safety and health requirements through rulemaking.

I believe these, as well as future steps for worker safety and health, will help focus initiatives already mandated to make DOE line programs fully accountable for operational programs and activities.

M&O CONTRACTOR RULE

Another recent initiative involves increasing the Department's efforts to improve how we and our contractors are carrying out our fiscal responsibilities. By the very nature of how DOE conducts its business, the Department depends almost entirely on contractors to perform the tasks assigned. While it is essential that DOE exercises proper technical control over this effort, it is equally essential that DOE exercises proper fiscal control. As custodians of the taxpayers money, it is up to us to ensure that it is properly spent. I do not believe we have done a good job in this respect. As a result, I have directed that certain actions be taken to improve the way DOE discharges its fiscal responsibilities in the management of our contractors.

One such action is directed at increasing the accountability of our M&O contractors and restructuring the award fee system to provide incentives for improved performance. On January 25, 1991, I announced an Interim Final Rule to hold the Department's profit-making M&O contractors, rather than the government, responsible for costs that could have been avoided by proper contractor performance.

This new rule represents the most far-reaching changes in the contracting practices of the Department since the Manhattan Project and has been almost 2 years in the drafting. Historically, the Department has reimbursed its contractors for almost every cost or expense and indemnified them from virtually every risk, without regard to the amount of care and responsibility exercised by the contractors. The Interim Final Rule is designed to enhance the performance and accountability of DOE's contractors and will provide the Department with another management tool to promote excellence in performance by its contractors. The new regulations, which will be effective for all new or extended M&O contracts, will apply to contractors who manage and operate DOE's facilities for profit. In their recent 5-year contract extension, Martin Marietta Energy Systems has substantially agreed to the provisions in the Interim Final Rule. We anticipate reaching similar agreements with our other M&O contractors in the future.

DEFENSE PROGRAMS MANAGEMENT CHANGES

I have also taken steps to strengthen the management, organization, performance, and oversight within the Office of Defense Programs for two new activities critical to our success. Two new positions have been created. The Deputy Assistant Secretary for Weapons Complex Reconfiguration will be responsible for directing headquarters guidance and oversight of all activities leading to a Secretarial decision concerning the reconfiguration options; and subsequently to all activities leading to full operation of a reconfigured nuclear weapons complex. The Deputy Science and Technology Advisor (Defense) will be responsible for providing advice and recommendations to the Assistant Secretary for Defense Programs and the Department's Science and Technology Advisor to optimize the utilization, performance, and contribution of the three weapons laboratories and the Idaho National Engineering Laboratory.

SUMMARY

As the committee proceeds with the difficult process of reaching final decisions on our fiscal year 1992 budget request, I want to reiterate the dilemma I face regarding decisions for the Atomic Energy Defense Activities programs. I believe the Department's fiscal year 1992 budget, including the fiscal year 1991 supplemental, is the bare minimum amount required to support our national security programs in a safe and environmentally sound manner. This budget was arrived at only after much soul searching that included the deferral of many critical activities. However, at the same time there is necessary growth in the Environmental Restoration and Waste Management program. This growth was anticipated and is vitally needed to support infrastructure expansion as we strive to meet our statutorily dictated environmental requirements. In a sense, this puts me between a rock and a hard place. In the outyears, there is a cap on the 050 account which must be met; however, there is no doubt that budgetary increases will be needed to meet the Department's expanding production and environmental obligations. We are looking at ways to assure all programs are operating efficiently, and I have directed that the Department undertake a program to reduce costs by improving our business management practices, but there are no easy solutions.

However, two other factors exist which contribute to potential future funding adjustments in environmental restoration and waste management. The first factor involves the transfer of responsibility for retired production facilities and other related activities to the Office of Environmental Restoration and Waste Management. We have the ability to plan for these anticipated changes. However, the other factor involves the potential cost increases to meet environmental compliance. This is of particular concern to me since, as I already mentioned, there are a significant number of uncertainties confronting the Department as it strives to meet the requirements of applicable environmental statutes.

Budget realities dictated constraints such that I had to make severe cuts in our weapons production complex, in our weapons research and development program, and in our program to pursue new production reactor capacity to replace our aging reactors. As I have already stated, those cuts required me to provide for restart of only one reactor at Savannah River, prematurely terminate the two-reactor strategy before the Record of Decision on the New Production Reactor Program, reduce critical laboratory personnel employment dedicated to maintaining nuclear weapons competence by about 6 percent, limit significantly important underground nuclear testing to its lowest levels since the testing moratorium in the 1960s, and continue to defer necessary maintenance and facility upgrades throughout the nuclear weapons complex.

I do not believe it prudent to continue to make these reductions in critical activities that support our national security. The situation for next year will not be better. I need your support so that I can provide the Nation with the appropriate national security programs this Department must statutorily provide. I would be pleased to answer any questions you may have.

INTERNATIONAL COOPERATION—WASTE MANAGEMENT

Senator EXON. Mr. Secretary, thank you very much. I appreciate your very comprehensive review of a tremendously complicated problem, and I again want to salute you for your work and cooperation with us on this whole series of matters.

There are so many questions. Let me start with one that takes us out of the realm, possibly, of what the most pressing demands of the budget are and how you manage all of these things in cooperation with us. Let me ask you to respond once again to something that you have worked on and that I have worked on for a long time. Maybe it is a futuristic proposition, but I think it is extremely timely, and it is with regard to cooperation between the Soviet Union and the United States on this whole matter of waste disposal.

I was in the Soviet Union the week before last and I had a very interesting meeting with Minister Mikhailov, the nuclear weapons and power minister. He controls everything from military to industrial use of nuclear energy and also the disposal of the waste. He conceded that they had a major problem in this area, and I said that we have also.

I asked whether or not he was aware of the overtures, at least, from you, the Secretary of Energy, and me, as a Member of Congress and Chairman of the Strategic Subcommittee, as to the chances of the international cooperation between the two superpowers, at least, with regard to working together to solve our problems for humanity.

We talked at some length about the new report out of Hanford that indicated leukemia was showing up in higher numbers, even after 15 years. Interestingly enough, he was fully aware of that.

He said they have serious problems and they are looking forward to more cooperation. He said that so far, it has been mainly talk.

He said there were some scientists coming over to the Soviet Union, I think this week or next. I don't know if you are aware of that particular delegation.

Just where are we going and how much do you think we can maybe press for this concept or idea of some international cooperation led by the two superpowers to clean up the nuclear waste that is causing as much or more problems over there than they are here, and we certainly know the problems here?

Secretary Watkins. I think it is a very important initiative, Mr. Chairman. We commenced last year getting very aggressive with the Soviet Union on it. They were very supportive of this initiative on our part.

Since that time, we have been able to finalize four initiatives with the Russians, in high level waste, in scientist interchange, in environmental restoration, and we are actively engaged just to outline some things that we're moving. We feel that this is one of the most important areas that we can exchange views on. Obviously, we are trying to get our own act together. We are hardly the paragon of excellence on waste.

Senator Exon. We can't wait.

Secretary Watkins. But we're getting there. I think that they are very anxious to share the emerging technologies coming out of our laboratories as we dedicate our laboratories now to Waste Management and Environmental Restoration, which we have never done before. So some good things are coming out of this.

We are also beginning to clean up for the first time. We have done so much of the characterization studies and that sort of thing. We are finding what technologies we do not have. These are exactly the kinds of technologies, because the materials are almost identical worldwide, that we can share with them, and that will be our intention.

We are also, of course, sharing this kind of information with our allies. Much of that is being done through the normal agencies of the International Atomic Energy Agency, as well as through bilateral and multilateral negotiations. I think this is probably one of the biggest growth areas in the Nation, and it doesn't deal only with radioactive waste. It deals with all kinds of toxic wastes and chemicals that are associated with the nuclear weapons complex as well. This is important. It is an active bilateral agreement between ourselves and the Soviet Union which is getting finalized in greater depth as we move down the pike. So we are giving it our full attention. Maybe Mr. Duffy might respond, too. He has been associated with the Russians on this project.

Senator Exon. Mr. Duffy, do you have anything to add to that?

Mr. Duffy. Yes, sir, Mr. Chairman. We were over there in July. We visited all their major sites of environmental degradation, the Kyshtym site where they had the accident in 1957, and we were at Chernobyl. We met with the Academy of Scientists, and we set up a four-program operation, involving: reducing the amount of material going into repositories; extracting what we call chemical extraction from the high level waste; identifying our capability in characterization and modeling for groundwater contamination, which is a major problem in the Soviet Union; and we identified the need to exchange scientists. One of the key projects that we identified was a vitrification project, which is progressing at the Savannah River site, where we will exchange our scientists for their scientists at the vitrification plant in Chelyavinsk, thereby both benefiting from the technology.

Senator **Exon**. Thank you. I am going to yield in just a moment to Senator Thurmond, who has some other obligations. We are trying to accommodate everyone. Later I would like to go into the whole matter in a little more detail with regard to just how much cooperation there is among our allies. It seems to me that disposal of nuclear waste is something that all mankind has to be interested in. I would like to know more about what the French are doing or not doing and whether, in your opinion, they are doing it right or wrong.

I guess, with all of the other difficulties that we have internationally, I think there are few problems that affect more people more directly than the disposal of high level nuclear waste and its effects on the environment. I will get back to that in a moment. I just wanted to pose the question so that you could think about it. I am very pleased now to recognize Senator Thurmond.

Senator **Thurmond**. Thank you, Mr. Chairman. The Attorney General is waiting on me, so I will have to rush. Admiral, we are very glad to have you here. Again, I want to compliment you for the great job you have done since you have been over there. I also want to congratulate you and your staff, Mr. Duffy, Mr. Claytor, Dr. Monetta, Mr. Tuck, and others who have provided exceptional support.

Admiral Watkins, I just have a few minutes and if you would, please answer as briefly as you can.

WASTE MANAGEMENT—BUDGET AND PROGRAMS

Again this year the Office of Management and Budget has been unable to fully fund the Department of Energy budget request. As I understand it, you had to reduce both the clean-up program and the Atomic Energy and Defense Activities budgets by over $1 billion. Can you tell us, first, do you have enough dollars to do your job and second, does this mean that you are putting production in front of the environment, as some critics say?

Secretary **Watkins**. In the case of the latter question, the answer is no, I don't believe we are, Senator Thurmond. I think we have balanced this off as best as we can.

We have scrubbed the Environmental Restoration and Waste Management budget back and forth because we are very concerned about the growth. We are $1 billion more than we were last year, and while we asked initially and had a target number of $5 billion, when we got into validated requirements, that is, where we had real budget quality figures, based on engineering and science, we clearly did not need the $5 billion. We could not have managed the $5 billion. We didn't know how to spend those dollars. Just to throw dollars at waste would have been a mistake.

We added back about $340 million in the supplemental in fiscal year 1991 which, in our Department, can roll into fiscal year 1992. The combination of the fiscal years 1991-1992 supplemental impact was sufficient to give us $4.5 billion for the Waste Management Program, and that is solid.

Now let's talk about some of the other programs. We had to cut about $50-plus million out of our New Production Reactor Program. Having made the decision to go to one reactor at the Record Of Decision following completion of the Environmental Impact Statement, we still lacked about $52 million to make it straight, to come in on time and schedule. We'll probably lose about 9 months and the total estimated cost of the program will go up.

That is the kind of "nickel and dime" against the various accounts that we had to put against programs and try to balance it out as best we could. So I would say we are on the margin as we usually are when we come up here after a good, solid [illegible] with the kind of growth figures you see over here on the chart. Obviously, I would always like to have a bit more to apply to programs. But in no way do I believe production is taking a lead seat to environment and waste management.

I believe they are balanced. I don't think one is more important than the other. I think we have just about matched it with our requirement to make Environmental Restoration and Waste Management 51 percent of our award fee. That is just about where we come out in the budget.

I believe that Mr. Duffy will be able to testify that he has about all the dollars that he can manage.

We agree with the Office of Technology Assessment (OTA) report to Congress in general, most of the findings were identified by us before that report came out. We are very concerned about our inability to bring our whole management team, including a shortage of the kind of skills you need to go in and do the clean-up work, a problem nationwide. What we don't need is more oversight. What we need are people who know how to clean up waste, and we need the technical underpinnings to do this. So we think we have the right balance in this budget, but at bare bones.

NEW PRODUCTION REACTOR

Senator THURMOND. Secretary Watkins, you indicated that the New Production Reactor would provide on an urgent schedule the means necessary for reliable production of tritium in a safe, environmentally sound manner well into the next century. Would you give us your definition of "urgent schedule?" Specifically, I want to know by what year we will need the NPR.

Secretary WATKINS. It's the year 2000 for operation. By "urgent," we believe that "urgent" is the right word. We do not know at this point in time what the longevity of the existing reactors is going to be at Savannah River. We have not even started the first of the three yet. They will have been shut down for 3 years by the time we start K-Reactor back up again. We have a lot to learn. There was no baseline. There was no solid as-drawn prints initially for those plants. We had to go back and rebuild the entire infrastructure under those reactors so that we could come into the modern world with something approaching commercial standards.

So we have a lot to learn yet from a scientific and engineering point of view. For example, we just found out last week that in the analysis of one of the potential loss of coolant accidents, which is a driving accident in your safety analysis, that because of gamma heating under those conditions in the rods, we had a molten condition among the cadmium that would make the stainless steel cladding under extreme conditions brittle. Now we have to review all that. That has never been done before, and that is part of our prestart-up criteria right now.

We may have to redesign septafoils and things in those rod drive mechanisms to make sure that under accident conditions, we can prove to ourselves, the Defense Nuclear Facilities Safety Board (DNFSB), and the American public that we are not going to have a problem in the event of loss of coolant.

So those are the kinds of emerging problems that, when you really wring out a plant, as we have in this plan, and put the extra billion dollars into that—that was dollars spent over what was planned by the administration when I took over—that will do the job. But we don't know what the longevity will be.

Therefore, it is important that we move expeditiously to get an NPR on line by the year 2000, even though we may find out later in the decade that somehow, by band-aiding and putting a few wires around the existing system, we might make it go on for a few more years. There is not a scientist or an engineer who proposes at this point in time that that be our plan. We should have as expeditiously as possible a replacement for those aging reactors.

Senator **THURMOND**. Mr. Chairman, I will have to leave. If you would, kindly ask the rest of my questions for the record. I would appreciate that. Thank you very much, Admiral. We're glad to have you here.

Senator **EXON**. Senator Thurmond, thank you very much.

Senator **EXON**. The questions have been submitted and, consistent with your request, they will be answered for the record. I will say at this time that there likely will be some additional questions asked for the record. We thank you, Senator Thurmond. Senator Bingaman.

Senator **BINGAMAN**. Thank you very much. Welcome, Mr. Secretary. Again, I commend you as I have in previous hearings before the committee on all the work you are doing. I think it is impressive.

WEAPONS LABORATORIES

I wanted to ask about a couple of different items. You have an advisory board looking at the future of the national laboratories, and you referred to that in your testimony. Would you briefly describe what you see at this point, what you anticipate as the future of the national laboratories, particularly the defense-related ones, of which I have a few in my state. What is their future in two areas, in environmental research and technology development?

Second, Dr. Bromley is coming out with a report next week that your Department has been actively involved in attempts to identify national critical technologies for both defense and non-defense needs. What would you see the future of the laboratories being in connection with the development of those technologies also?

Secretary **Watkins**. This is the reason for the study, Senator Bingaman, because there are so many things like this, environmental restoration and waste management technologies that we have never asked the labs to do. There is the whole issue of transfer of technology from, say, highly secret defense activities which may unfold to what could well be a very important commercial product. We have no mechanism to extract technologies from a highly classified program, pull it out separately into the "white world," if you will, and move it into our own commerce, such as might have been the case with ceramic engines in the cruise missile. If we'd have been smart, we'd have been the leader in the world in ceramic engines, but now we are not. That is a critical technology.

We have to get into this whole transfer of technology linkage with those critical technologies. As you know, the Senate and you, in fact, have been very much a leader in that area, to help us with changes to the law that would allow that transfer to take place very quickly. I think that is the key, coupled with the critical technology. So the labs will be in the middle of that.

What worries me, and the reason I am driven toward this study by a very competent group of people on my Secretary of Energy Advisory Board, is the fact that we have lost 2,000 scientists since 1989 out of our weapons laboratories. This is very worrisome because this comes out of the RDT&E on nuclear weapons.

Well, this sends a signal into the system that, unless I am careful, I am going to get second-rate scientists working on nuclear weapons safety. We cannot tolerate that as a nation. So we have to worry a great deal about the laboratories and when we cut a program like SDI, we aren't just cutting some kind of mythical program. We are cutting basic research. So those scientists don't know what the outcomes are going to be of their basic research. So much of it goes into technical work in medicine, in medical research, and goes into all kinds of potential commercial products, such as high speed computers and miniaturized computers, such as come out of SDI. These things have tremendous commercial applicability and need to be put into "made in the U.S.A." commercialization before we sell the technology cheaply off-shore and see all of the foreign nations as the vendors of those products.

We are losing these scientists because of cuts in defense, what we would call "work for others," as well as our own cuts that I mentioned here, where we are taking deep cuts in research. We have also lost some research in fusion because of "pork" projects that were inserted last year and taken out of our research budget for fusion. This is at the very moment that we are converting fusion from research to development, at a time that we are working with the international community in the International Thermonuclear Experimental Reactor (ITER), to try for the first time to give us an energy source. The labs have to stay involved and I have to protect those laboratories because they are unique gems in the U.S. crown. There isn't any place else like them in the world. They are at the advanced stages of technology, and we have to bring industry and business to us in a hurry. So, unless we set up these mechanisms now, we are going to see the continued demise of those laboratories in terms of the scientific skills, the intellectual skills, and we will never recover from it.

So I am very actively involved, as you know, in this effort with Dr. Bromley, and we will very definitely be a key part of working on all of his programs. Our laboratories have to be stabilized so that they can look ahead. By the same token, we don't want to rob from academe or the private sector. So we are trying to set up the right mechanisms so that we can share in the research, share in a most cost-effective way without interfering with individual ingenuity.

I think that out of this study, which I hope to have by late this year, I will have a better feel and will work with the committee up here, to try to help you find the mechanisms we need to stabilize those laboratories for the long haul for the Nation, recognizing now that the amount of effort we are putting into nuclear weapon development and research out there has dropped significantly. In fact, it is generally under 50 percent of the laboratories' efforts.

So these labs, while we used to call them "bomb factories," I think we had better stop calling them that because it is going to change very rapidly in this decade, particularly as we go down in the size of the weapon stockpile. And yet, we have to maintain that expertise that ensures that the smaller stockpile, which is probably more sophisticated technologically, and which, with minimum numbers of tests in the desert, takes the most exquisite scientific review. These are the kinds of things that you are talking about and that I am concerned about.

Senator **BINGAMAN**. I anticipated that that would be your answer. Let me ask about a specific item that is in your budget. But I see that my time has expired. Mr. Chairman, why don't I go ahead and defer to you, and wait until the next round to ask a specific question related to that.

Senator **EXON**. Senator, thank you very much. Mr. Secretary, I am going to enter into the record at this time and furnish you a copy of the minutes that we took of the meeting that we had, as I indicated earlier, with Minister Mikhailov which has some of the give-and-take therein.

I took it from our conversation that he was not satisfied with the cooperation, but anxious for further cooperation. I just wanted you to have a copy of this so that you can learn what I learned with this first-hand conversation with Minister Mikhailov. It might be helpful in pursuing this whole proposition.

[The information follows:]

NOTES

MEETING WITH MINISTER MIKHAILOV, DEPUTY MINISTER OF ATOMIC ENERGY, THURSDAY AFTERNOON, MARCH 28, 1991

In attendance Senator Jim Exon, Christopher McLean (Office of Senator Exon), Mssrs. Green and Giddens (U.S. Embassy), Minister Mikhailov, (Minister of Atomic Energy), Mr. Anatoly Velov (Minister of Foreign Affairs), Mr. Serkov, Mr. Bogdin.

Senator **EXON**. I am pleased that you were able to take the time to meet with me. I understand that you are responsible for nuclear weapons and power production and that you are also having problems disposing of nuclear waste in the U.S.S.R.

Minister **MIKHAILOV**. I am glad to meet with you, Senator. [Introduction of colleagues.]

Senator **EXON**. I am not a scientist, not an engineer. I am a U.S. Senator charged with the responsibility as Chairman of the Strategic Forces and Nuclear Deterrence Subcommittee of the Armed Services Committee for the clean-up of nuclear waste—

we have serious trouble with about 32 sites across the USA awash with nuclear waste without the means to safely dispose. We are anticipating $75–$150 billion expenditure for safe disposal.

Please explain, is your agency in control of both nuclear production for civilian and military uses and waste clean-up?

Minister MIKHAILOV. I am in charge of nuclear power production and military production, of course we are in charge of nuclear waste clean-up but I am involved in nuclear weapons production and industry.

We could discuss in great detail with you, energy, power, supply, and waste disposal outside my field.

Senator EXON. Let's talk about what we can talk about in what you are doing about clean-up. Is there a concern in your government?

Minister MIKHAILOV. Yes, the government and the nation are really concerned.

Senator EXON. I am prepared to talk about production, but it is classified. We both know how to make the stuff, but as nations, we have not done a good job of cleaning up the environment, which is a threat to the world.

What agency is directly in charge of safe clean-up of nuclear waste? In the USA, it is the Department of Energy; such as plutonium, tritium and the rest. Is it a separate Department in your government?

Minister MIKHAILOV. No other Ministry aside from ours is in charge of, as you know, highly enriched Plutonium 235, Uranium 239, and Tritium. And our Department and Ministry is directly in charge of production and security and clean-up and burial.

Senator EXON. Good. I made two speeches pointing out the fact that if we are trying to enter into a START Treaty that is trying to reduce warheads . . . if we can get together on reduction of inventory, we should be able to get together and work together on clean-up. Have you contemplated something along those lines?

Minister MIKHAILOV. It is a very good idea to get the best minds together both in favor of proposal. Nuclear waste burial is a common problem. If we can get together we will have good ideas. Joint talks will remove problems for both sides—and together with us nuclear waste is monitored by the State Nuclear Safety Supervision Committee. Nuclear warheads—what did you mean about the nuclear warheads—charges or warheads.

Senator EXON. START Treaty has to do with the destruction on both sides. My point is if we, as two antagonists, can agree on reductions of warheads, it follows that we can cooperate on clean-up of the waste from the production of those warheads.

Minister MIKHAILOV. Clarify once again about waste.

Senator EXON. If we have START, you would destroy warheads under some supervision—after we dismantle and destroy, we have to dispose safely of remains. I am using the relationship to say that if we can cooperate on this, then we can cooperate to clean-up the accumulated waste over the years.

We are not sure, for example, we think we are on the right track, we have a facility in NM, underground caverns, where high level nuclear waste can be disposed in some form, I suppose in caverns that are "safe" for thousands of years until they are no longer radioactive. We feel, we are not sure, we have the safest disposal method. Maybe you have something better. In another example, the French are now disposing of their own nuclear waste and under contract with Japan to encase in drums and glass and stored under French mountains. Are you using such methods—what is your opinion on the safety of such methods?

Minister MIKHAILOV. It is difficult to estimate the safety of the French method on time of storage in barrels. Our system, it is known 5–7 year waste, stored near production, then placed in highly insulated containers depending on the kind of waste, of course, depending on the type of waste, liquid is evaporated, if solid, then in concrete drum, if active, glass is used; furthermore, long term in these containers in caves and we have several projects.

Senator EXON. I take it I can report to the Secretary of Energy that you would not be adverse to having some preliminary talks to work together to solve problems both sides recognize.

Minister MIKHAILOV. I think that would be a good way to solve this difficult and complicated problem in that is by joint effort. I'm convinced we are ready to solve by cooperation. Most that are experts are proposing "exotic" methods—to discuss would be advantageous to both sides.

Senator EXON. Do you have public involved in environment, in disposal of nuclear waste? It is a "firestorm" in the USA today.

Minister MIKHAILOV. The public is very much concerned.

Senator EXON. I thing they are more concerned than AIDS and they should be.

Minister **Mikhailov**. You are right. People like electricity and heating and object to building atomic energy plants. It is very satisfying that we have been discussing. In our Parliamentary Committee on the ecology have been discussing for year. The level of long term storage is not good enough. At hearings we are reporting dispo[illegible] and reporting on the progress of projects. Cooperation is useful to both sides.

As to nuclear warheads, there are problems here. During long term storage, induced radiation is present on previously non-radioactive materials as a result of Gamma and other radiation. Of course, the burial of these materials are a problem. If we come to 50 percent reduction, it is an acute problem.

Senator **Exon**. Are we sharing all of the information between our two countries with medical people with regard to what we are both learning regarding new problems if disposal—Chernobyl—tragedy—out of tragedy comes knowledge. I suspect we share. Example: last week we had a medical report on the problem which we thought originally did not exist. We had been monitoring our workers around nuclear plants and concluded that there was no increase in leukemia/cancer and deemed it was safe. But after 20 years there was a remarkable increase . . . I think up 60 percent . . . which led us to believe we have not been doing as good of a job to protect workers.

Minister **Mikhailov**. I believe that if you share results, that would be wonderful, but as far as I know, the exchange exists. I will give examples: not long ago we met with Finland on the influence of nuclear tests on the ecology of the North. We gave very comprehensive reports. Those people are involved in wide ranged cooperation. The U.S.S.R. is reducing values of emission exposure in U.S.S.R. U.S.S.R. monitors such things, not sure of sufficient volume. Our ministry cooperates with health ministry of U.S.S.R. and the Institute of Radiology. Since you have touched on that specific problem, I invite comment from Serkov and Bogdin.

Mr. **Serkov**. 40 years close contact with Drs. and in production and testing. The production facility results are the same as the USA. It is rarely so that there is a difference in states of health between 10 and 20 years. I welcome your proposal for closer contacts and greater exchanges. You are right that it would allow us to take better measures.

Mr. **Velov**. Minister Mikailov mentioned the meeting with Finland on problems of nuclear discussed. You are aware of the amount of discussion in world. You have just stated a good discussion of the effect of nuclear testing and environment. Soon to be discussed in Canada—Conference would give chance for discussion. If you can convey to the experts the desire to meet and discuss.

Minister **Mikhailov**. During that Conference Los Alamos and Livermore and Med will be there as well.

Mr. **Velov**. Two sections testing safety and environment—satisfied with continued cooperation between the U.S. and U.S.S.R. on disposal.

Senator **Exon**. Disposal not part of Canadian conference—"No" Logical extension?

Minister **Mikhailov**. Quite right. Environmental protection is an important problem for us too. If we exert joint effort—fact would be welcome.

APRIL 24, 1991 CANADIAN CONFERENCE

Mr. **Gidden**. Clarify your testimony at the Environmental Committee.

Minister **Mikhailov**. Can't say that there is a project, but all concern nuclear waste clean-up. One is burial and monitoring of waste for 100 years. There are also projects of "burning"—neutron flow quick decomposition. There are other fields which require research—committee considered all these but requires funding and we have addressed Ecology Committee so work can be done in framework of international cooperation. I would be good to share experience to find acceptable options all projects require funding which is not sufficient in the U.S.S.R.'s case. When we submit to OK? great! When money needed—no money.

Senator **Exon**. I am a member of the Budget Committee also. So I know of what you speak. We learn by experience we put strict standards on commercial nuclear power with heavy penalties which was effective in our capitalistic system. Unfortunately, we did not follow that in government policy where government has exclusive control of nuclear material for DOD. Now we have a major problem on our hands. It seems obvious to cooperate.

Minister **Mikhailov**. Yes, I quite agree. Now a draft bill is being prepared—law on Atomic Energy to consider market economy and that legislation includes great responsibility and penalties for violation which must correspond to international standards of safety and other facilities as well. As you said, both in your capitalistic society and Socialist system, monitoring based only on valuation of facilities—now personal responsibility.

Senator **Exon**. I am a legislator not an executive but was Governor with responsibilities as an executive. I will visit with our executive branch about our discussion.

(Pleasantries, handshakes, photos, and goodbyes.)

OIL AND OIL PRODUCTION

Senator **Exon**. In this regard, I want to digress for just a moment to get your idea on another meeting that I had on a whole series of subjects with Minister Filmanov, the oil and gas minister. We had a very wide-ranging discussion on a whole series of policy initiatives that I have been trying to put forward, basically with regard to some ways that we might be able to help the Soviet Union with their declining production of oil and natural gas. It has been going down, as I understand it, in the Soviet Union by about 5 percent a year. And yet, we know that they have tremendous reserves. We were talking about the possibility of placing some loans from the United States through some Federal agency or international agency where the Soviet Union could buy our technology, drilling rigs, pipes, means of transporting this, on some kind of basis so that they could increase their oil production and maybe enter into some kind of barter with us where we could swap something that we have in abundance, food, both raw food products and finished food products, for their oil. He was very interested in that.

He also appealed, near the end of our conversation, when we got to talking about the oil fires in Kuwait, to us. I said do you have expertise in the area of putting out oil fires. He grinned at me and said yes, you are looking at the expert in the Soviet Union in this regard. It seems that he came out of the oil fields and has a lot of personal knowledge on this. He said that the Soviet Union had not been contacted to assist in the putting out of the oil fires in Kuwait. He thought that working together with their experience, that they might be able to help. He asked me to pass along to you if you could do anything for any help that they might provide, they would stand ready to do so. I guess we have a terrible environmental mess on our hands in the Persian Gulf, and if we can use any of the facilities of the Soviet Union and their know-how in this area to help our experts, maybe we could expand and expedite getting our program going in controlling those oil fires. So I pass that information along to you.

Secretary **Watkins**. I will see that that information is passed on to the proper authorities. We do not have responsibility, as you know, right now, Mr. Chairman, for this. This is done through the Kuwaiti Oil Company, which is basically the Government of Kuwait, you might say, at this point. They have asked certain people to come in, and we have done that, the United States. But they have contracted directly with a variety of companies—Boots and Coots and others. So this is ongoing right now. I don't know to what degree the Kuwaiti Oil Company has asked others. But I will see that the information gets passed to the proper officials and into our Embassy there in Kuwait City, to see if this should be done.

U.S.-SOVIET TRADE RELATIONS

As far as the other statements are concerned, we have sent two delegations with Secretary Mosbacher to the Soviet Union for the very purposes you outlined about petroleum. They have declined about 500,000 barrels a day. They are the biggest producer in the world. We have to worry a lot about that production base. That affects the entire world economy. So it is an important initiative.

The problem we have run into is that most of that will be done directly with private firms in the United States. Our private companies are very worried about their cash flow problems. There just is not enough money coming from the Soviet Union. So it is very difficult and it is going to have to come through some other mechanism because they simply don't have the money to fund all these things.

This is the same problem we are running into with this waste management issue. We could move faster. We could move better. But they don't have the money even to send their scientists to this country. So it isn't just a matter of lack of cooperation from their standpoint. We want to get on with this thing. We think it is in the best interests of all nations of the world to move together on this Environmental Restoration and Waste Management initiative.

On the other hand, they don't have many resources to apply to this and we don't have resources to give them unilaterally something out of our budget. We don't have that authority.

SOVIET REACTOR SAFETY

So it is going to have to be addressed at a higher level, and in many areas. You have touched on a few, but there are many more, such as the area of nuclear reactor safety.

We have been working with them, as you know. We are heavily engaged with them now to try to bring a new sense of discipline in operating practices and procedures, and simulators and so forth for reactors that they admit are unsafe in design, with positive void coefficients and the like. So all of these areas require resources on the part of the Soviet Union that they are finding very hard to come by. This has really done more than anything else to hold back progress.

Senator EXON. Thank you, Mr. Secretary. I didn't know who else to go to with that proposition. But, I am glad you are going to pass it along to the Kuwaiti people in charge of that.

U.S.-SOVIET TRADE

Furthermore, I thoroughly understand and appreciate your statement that they have no hard currency whatsoever. It seems to me that if we are ever going to develop more trade with the Soviet Union, we are going to have to go to some kind of barter arrangement. That is why I am exploring the possibility of loans through an international agency of some type that would get them going.

As far as I can tell, right now, there are only two things that have been identified that the Soviet Union has that we might need or think we need. The first is vodka. Now, vodka has already been usurped by the Pepsi Cola Company. They have a barter going on where they are sending in soft drinks for hard drinks.

The only other thing that the Soviet Union has that we need and obviously have an appetite for is oil. It would seem to be in our interest and in the Soviet interest if we did not rely as heavily as we do on the Persian Gulf, as evidenced by our recent difficulties, partially successfully concluded with the war.

So what I am talking about is exactly what you are talking about. If we are going to wait until they convert their rubles into something that will be recognized internationally, then we are never going to get anything done. They are so far behind and the economic situation there is so desperate that they are now talking about a possible civil war. It seems to me that we have to use some ingenuity here and get away from trading not just always on the almighty dollar, but something else that is more practical. I want to continue to work with you on that.

My time on the second round is up. I am glad now to recognize Senator Bingaman once again.

ENVIRONMENTAL AND MOLECULAR SCIENCES LABORATORY

Senator **BINGAMAN**. Thank you, Mr. Chairman. Let me ask the follow-up question that I was going to about the involvement of labs. It is a fairly specific question.

In the 1991 budget request, the construction line item that you had in there for the Environmental and Molecular Sciences Laboratory (EMSL) was shifted from non-defense into the Environmental Restoration and Waste Management budget. It was shifted from non-defense to defense. I would be interested in knowing the thinking behind that, what role you see this new laboratory playing. Is there some activity that your existing lab complex is not able to accomplish that requires additional construction or significant additional construction and a new laboratory?

Secretary **WATKINS**. Let me ask Mr. Duffy to respond to that. He is the "owner" of the Hanford site and is very much involved in the Environmental and Molecular Sciences Laboratory there.

HANFORD CLEAN-UP

Mr. **DUFFY**. Senator, as you realize, the Hanford site is our most expensive site projected for clean-up. It could be anywhere from $25 billion to $75 billion. While the problems there are unique to Hanford, they are applicable to other areas.

The Environmental and Molecular Sciences Laboratory was transferred from energy research to Environmental Restoration and Waste Management because we need the technologies to develop the clean-up for the Hanford site that will be applicable as generic solutions to other sites. But if we can save the money by development of technology at the Hanford site using the Environmental and Molecular Sciences Laboratory at that point, we could almost pay for the programs that clean up about three other sites. That is why we believe that the Environmental and Molecular Sciences Laboratory, directly related to the major portion of the Hanford clean-up, is going to save the government a tremendous amount of money that can be used in other areas.

We have environmental programs at the other laboratories for their specific clean-up, but there is no comparison in the degree of complexity at each of these other sites that there is at the Hanford site. We are using Sandia and Los Alamos in our integrated programs, and we are also working with Los Alamos on the development of chemical extraction processes for taking plutonium out of soil, which is directly related to some of the problems at the Los Alamos site. But in saving money, we have to have a laboratory at the Hanford area that is directly related to saving costs at the Hanford site. And, if we save 10 percent of the Hanford costs of clean-up, we have made available money for every other site in our program.

STRATEGIC ENVIRONMENTAL RESEARCH AND DEVELOPMENT PROGRAM

Senator **BINGAMAN**. Let me ask about the strategic environmental research proposal or activity that we approved last year and used some Department of Defense funds for. I know there has been some back and forth as to the involvement of the Department of Energy in that. I think the way we set it up, we had a panel of eight. I think four of them are from the Department of Defense, three are from the Department of Energy, and one is from the Environmental Protection Agency. As I understood it, the idea was that there would be proposals made to that group for doing research in the area of environmental technology that would then be approved or disapproved. Can you tell me the status of the Department of Energy's efforts to be involved in that?

Secretary **WATKINS**. Yes, sir, I can. We do support Congress' effort to bring the Department of Defense, the Department of Energy, and other research and technologies capabilities to enhance the ability to meet environmental obligations. In fact, we are working very closely with the Department of Defense and the Environmental Protection Agency now to develop what we call a Single Integrated Strategic Environmental Research and Development Program.

The individuals on the council have been picked. They are high quality, top people, with Dr. Charles Hertzfeld, Director of Defense Research and Engineering, being the chairman of that council. They will meet in May. We are now working on the charter, to define that charter and review a draft plan—this is all being worked in parallel—and developing a prioritized list of relevant initiatives that the Department of Defense, the Department of Energy, and the Environmental Protection Agency can pursue with the fiscal year 1991 funding. The proposed split is the Department of Defense at 45 percent, the Department of Energy at 45 percent, and the Environmental Protection Agency at 10 percent. So I think it is going well. After the May session, we will know pretty much how the plan is beginning to unfold. I think it would be a good time for us to advise the committee up here just where we stand on that. So we are moving out aggressively.

There was initial confusion about the amount of dollars. It wasn't $200 million. It was, finally, $150 million. Thirty million of that went, I believe, to some site in Apollo, Pennsylvania, for a special clean-up. So that was more or less earmarked. We are now talking of a split of $120 million. I believe we can get on that plan very quickly and make effective use of those dollars.

MANUFACTURING TECHNOLOGY

Senator **Bingaman**. Thank you very much. In the area of manufacturing technology, we did something else in another part of the defense bill last year, to direct the Department of Defense—not your Department, but the Department of Defense—to put together a manufacturing technology plan in coordination with yourself and with the Department of Commerce. This is something on which I think they have been dragging their feet and have done very little about up until now. We had a hearing earlier this week, where they indicated that they were getting started on that. I would just bring it to your attention because I know that there are some significant activities going on in your Department that relate to environmentally conscious manufacturing, and there is a lot of know-how that relates to new manufacturing technologies in your Department.

I would like to see you folks prod the Department of Defense to take this directive from Congress seriously. We directed them to put together a manufacturing technology plan, including your Department, Commerce, and Defense. I just call this to your attention because I do think it is something that could be important, and I know it is of interest to you. I hope that you or someone in the Department will urge the Department of Defense to move ahead with that.

Secretary **Watkins**. It is to our benefit to have a close association with the Department of Defense. They have a lot of expertise in that area, I know from my experiences there, and it would be mutually beneficial to have them working with us. I think we might find that we can save some dollars as well, or certainly more effectively focus some dollars that we may be redundant on right now. So we will pick that up and I will talk with the Defense officials on it.

Senator **Bingaman**. Thank you very much. Thank you, Mr. Chairman.

Senator **Exon**. Thank you very much, Senator Bingaman. Senator Levin.

TRITIUM REQUIREMENT

Senator **Levin**. Thank you, Mr. Chairman. Let me add my welcome to our witnesses this morning. Admiral, a few months ago, in Governmental Affairs, we talked to Mr. Tuck about the tritium requirement. He indicated that the President was expected shortly to know what the requirement was for tritium. Do we have that figure now?

Secretary **Watkins**. We have it for planning purposes, Senator Levin. It has not yet been approved. But we are all, the Department of Defense, the Department of Energy, and the National Security Council, aware of this. We are moving to that number.

This is really the basis for our fiscal year 1992 budget. So we had to anticipate what the Weapons Stockpile Memorandum would say. But it has not yet gone through the final approval process by the President.

Senator **Levin**. Would you supply that for the record, then, what that requirement is, for planning purposes?

Secretary **Watkins**. I will have to provide that for the record on a classified basis.

Senator **Levin**. Yes, as classified.

[The information follows:]

Tritium requirements for the stockpile are derived from the Presidentially approved Nuclear Weapons Stockpile Plan.

[Deleted.]

Senator **Levin**. Is our total tritium requirement a classified number?

Secretary **Watkins**. Yes, sir. It is.

Senator **Levin**. Why is that? If our total megatonnage, for instance, is not a classified number, why would our total tritium requirement be classified?

Secretary **Watkins**. I'd have to ask some of the classification experts, Senator Levin. I have some here if you would like me to answer that for the record.

Senator **Levin**. If you could just check that out, see if we can't declassify that, or at least give a range for that. It strikes me that that can no longer be justified, because we do have other figures which are no more indicative of what our capability is, in megatonnage, than our total tritium requirement, or so I would think. If you would check that our for me, I would appreciate it.

Secretary **Watkins**. We'll check that out for you and I will let you know.

Senator **Levin**. Okay.

[The information follows:]

The precise figure for the total amount of tritium in the stockpile is classified because it permits estimates of U.S. capabilities to maintain the viability and deterrence value of the nuclear stockpile. Declassification of this information would therefore jeopardize the national security of the United States.

STATUS OF K-, P-, AND L-REACTORS AND NPR

Senator **Levin**. Using, then, that requirement that you are planning on meeting for 1991, can you tell us now whether or not the 1991 requirement would be met by a 50 percent reactor operational level for the K-Reactor?

Secretary **Watkins**. Yes, sir. Let me explain it a little bit differently. When you say 50 percent, are you talking about 50 percent power operation of the K-Reactor?

Senator **Levin**. Yes.

Secretary **Watkins**. We are anticipating that we can meet the goal, and I'm talking about tritium goal, in the Stockpile Memorandum which has now been modified to reflect a downsizing of the entire stockpile. We believe that we have enough in the inventory to actually give us some additional time. In other words, we can now get the reactor on the line, wring it out, test it out, see if we have to shut it down again for any modification for continued operations, and that sort of thing, and we have some time in there.

But we have no time after about 1994. In other words, as the stockpile comes down, obviously you have returned components which you can then mine the tritium out of, which we are now doing, and you can avoid the sense of urgency that was present when I took over the Department, that we were going to stay at a very high level in terms of the stockpile needs. That has been changing over time, and it is a kind of moving target. It has given rise to this downsizing of the whole complex. So we do believe that 50 percent of power of those reactors is sufficient for that goal.

Senator LEVIN. Of that one reactor?

Secretary WATKINS. Just one reactor, now, with the new stockpile sizing. So that is very important.

Senator LEVIN. Now, assume that the K-Reactor is on-line and it is at 50 percent power. Will that meet our requirement in the year 1995?

Secretary WATKINS. Yes, sir, it will.

Senator LEVIN. And that, is it not true, will meet our requirement through approximately the year 2000?

Secretary WATKINS. Yes, sir, it will, unless there are some changes. In other words, we have to be ready for change. That assumes that that reactor can operate that long. We do not know that yet.

This is why we are keeping the L-Reactor, one of the two remaining reactors, in what we call a ready condition, with a 12-month start-up potential. We are doing that until such time as we can prove that the K-Reactor can really operate safely, can really meet all the seismic and all the other specifications, can take the upgrades, the plant shutdown, and maintenance periods, can jell with the operating periods to make sure that that one reactor can do it before we let L off the hook. That is the only tritium generator we will have because N-Reactor at Hanford is now in dry stand-by, which means that by October 1991, we have to make a decision whether or not to completely allow the dismantlement of the N-Reactor for other purposes, for waste management purposes.

So this will be an important year to get the K-Reactor on line, to see what we can do in the near-term to say whether or not the N-Reactor can stay in dry stand-by or be dismantled, and then watch the operations until such time as we can prove that the K-Reactor can do it alone. Then the L-Reactor will probably serve as a source of materials for the K-Reactor over time. It will be an important adjunct. But right now, it is just a contingency reactor.

Senator EXON. Senator Levin, may I interrupt you for just a moment? If you would like to continue for your second round, we would be glad to allow you to do so. We are in the second round and you have just finished your first. Do you wish to continue with a second?

Senator LEVIN. Sure. I didn't even know I was finished with my first round. I didn't get a note yet on that.

Senator EXON. Well, you are about to get one, and I just wanted to give you the additional time now if you want it.

Senator LEVIN. Yes, thank you. If it is all right with the Chairman, I will move into the second round.

Senator EXON. Sure.

Senator LEVIN. Let me try to summarize what I understand you to be saying. It is that we don't know for sure if the K-Reactor is going to operate at 50 percent power. That is yet to be determined. But my question is if, in fact, it does operate well at 50 percent power, it will meet our expected tritium needs through at least the year 2000?

Secretary WATKINS. Yes, sir. That's correct.

Senator LEVIN. Now, can we bring the L-Reactor on?

Secretary WATKINS. That is assuming, of course, that we continue with the down-sizing and the re-mining of the returned warheads, obviously. Any change in that would change that markedly.

Senator LEVIN. Right.

Secretary WATKINS. This is another reason why until we get a New Production Reactor, we don't have any back-up for the one reactor.

Senator LEVIN. But you do have L-Reactor as a back-up, right?

Secretary WATKINS. We will have L as a back-up for a while. Then there's going to be a big funding decision as to how long we want to maintain that, assuming in your scenario that the K-Reactor is successful.

Senator LEVIN. Well, let's keep on that scenario.

Secretary WATKINS. That would be prudent from my point of view, until such time as the New Production Reactor is within sight, within the start-up framework of the L-Reactor.

Senator LEVIN. Let's assume that the K-Reactor works as expected and hoped for. We have invested a lot of money in the restart. And it is operating now at 50 percent. Can the L-Reactor be started later on in this decade? If it is in mothballs, could it be restarted, for instance, if we wanted to do so in 1998?

Secretary WATKINS. Yes, sir. But it's quite expensive to maintain that in a ready condition. It is not simple. The core is loaded. It is a wet reactor and virtually requires highly qualified operators around the clock. The answer is yes, you can maintain that.

Senator LEVIN. Would you give us, for the record, the costs of maintaining the L-Reactor so that it could be restarted later in the decade?

Secretary WATKINS. Yes, sir. I can do that.

Senator LEVIN. Thank you.

Secretary WATKINS. I will provide that for the record, if that's all right. I don't have that figure today.

Senator LEVIN. That would be great.

[The information follows:]

We do not have available at this time a high quality estimate of the cost of maintaining the L-Reactor in a ready-to-operate status through fiscal year 2000 as that is not our current plan. Based on the information available to the Department at this time and our assumptions on the costs associated with K-Reactor, we estimate that costs might range from $70 to $90 million annually after fiscal year 1992. Fiscal year 1992 costs of about $290 million, as reflected in our budget request, would still be required in order to bring L-Reactor into a status equivalent to that which K-Reactor will attain prior to restart. This brings the total cost estimate for the period fiscal year 1992 through fiscal year 2000 to between $850 million and $1 billion. This estimate does not include any capital funding for L-Reactor to perform the long-term, post-restart improvements currently planned for K-Reactor in areas such as seismic and fire protection. The estimate also assumes that K-Reactor operating staff would be utilized to operate L-Reactor. It is important to note that if a decision was made to restart the L-Reactor, there would be a requirement for additional funds during the restart preparation period. In addition, if a decision was made to maintain L-Reactor in standby status for such an extended period of time, WSRC and the Department would need to perform a more rigorous funding analysis.

Secretary WATKINS. It is going to be on the order, I think, of around $67 million or $70 million a year, something on that order, to maintain it in that kind of condition.

Senator **Levin**. And you are going to do that anyway through 1994 at least?

Secretary **Watkins**. We will do that anyway for the next year or two, as a minimum. Beyond that, I think it is going to be determined by what we find.

Senator **Levin**. All right.

START IMPACT ON TRITIUM

Does the current requirement, you call it a planning purpose requirement, I think, include any reduction based on an expected signing of a START agreement?

Secretary **Watkins**. Yes, sir. In fact, we are moving in a direction now——

Senator **Levin**. I don't mean quite that. The number that you are basing your requirement on, does that assume a START agreement or if we sign a START agreement, would that be further lowered?

Secretary **Watkins**. No. It will stay about where we have it now. In other words, we are moving in a direction toward an anticipated START agreement.

Senator **Levin**. So that number, which you are going to supply us for the record, assumes that there is going to be a START agreement. That is a little different, I think, from what we heard at our last hearing. That's okay.

Secretary **Watkins**. The number that we are targeting now in fiscal year 1992 is consistent with the numbers in the START agreement.

Senator **Levin**. And assumes that we will sign it?

Secretary **Watkins**. Yes, sir.

Senator **Levin**. So, if we sign a START agreement, that number then will not be lowered?

Secretary **Watkins**. No, sir. But, obviously, there is talk about if we sign a START agreement, there is going to be immediate effort to look for the next phase. Again, this is why the reconfiguration of our complex moves into a variety of percentage reductions from the then-existing stockpile level. So a 30 percent reduction, perhaps another 30 percent reduction, and so forth. We have sized all of those things in a way that can provide some modularity to our concept. This is why I think the reconfiguration of the complex study was a valuable one, in that we can move in any direction. We can move up, we can move down. I don't know where it is going to go after this phase, but this is a very significant reduction, as you know, about 30 percent.

Senator **Levin**. Is the life expectancy of the K-Reactor still 10 to 15 years?

Secretary **Watkins**. We don't really know, Senator Levin.

Senator **Levin**. You have no projection on that?

Secretary **Watkins**. No, sir, we don't. There isn't anybody who is going to give us that figure. I have tried to force it out of the engineers and scientists, and they just won't do it. They have to get the plant hot and operating under the new, modern, critical evaluation program that we have established. We have not had anything like that.

Senator **Levin**. When will we know or have a best guess?

Secretary WATKINS. I think we will know next year, sir, about the time we shut it down for our first tritium extraction, which would be in 1992. I think then we'll have it.

Senator LEVIN. Would that be early in 1992 or late in 1992?

Secretary WATKINS. It's about 6 months after restart, whenever that is. So we're talking about March or April of next year. I think we'll get a first real feel then for just what we have.

Senator LEVIN. That's fine. Then if we reactivate L at some point, let's say 1995, let's say we keep it going until then and in 1995 we decide that we are going to restart L. Would that, do we expect, have about the same life expectancy as we find that K is going to have?

Secretary WATKINS. It is my expectation, because of the hours on the plant, that we would have probably more life in the L-Reactor just because we haven't operated it for several years. So, obviously, I think we have more life left in it.

Senator LEVIN. And that's even if we start it later, like in 1995 or 1997? It still would be expected to have more life in it than the K-Reactor?

Secretary WATKINS. Assuming we maintain upgrades; we also can upgrade to any modern diagnostic standards that might come out of our work. As you know, standards change. Seismic and others are refined. Different modeling techniques have you look back. So with all those caveats, it is possible that it could last a bit longer. But, again, anything that is sitting around for 40 to 45 years with old technology, you will be straining to bring it on-line, and at great expense. So, hopefully, with the NPR looming on the horizon, we are not going to pour a lot of money into continuing the upgrades of L. This is why I am hesitant to say how long L can sit in the category of wet lay-up with a 12-month standby. I don't know the technical ramifications of that off the top of my head. We would have to really do a thorough study, and we will be doing that study, but, we have to get these reactors on line to make any kind of projections like that.

Senator LEVIN. My time is up. Thank you.

Secretary WATKINS. I don't think it would be good at this point in time to consider this the NPR. That is what I'm saying. I think it would be very inappropriate to draw the conclusion that somehow we can band-aid these things forever. At some point they are going to give up on us. Certainly, they are going to probably exceed our ability to maintain them consistent with current equivalent commercial standards. They just weren't designed that way to begin with.

Senator EXON. Senator Levin, why don't you continue.

Senator LEVIN. I don't think the issue is forever. I think the issue is how long will K last.

Secretary WATKINS. We're saying 2005 for those three reactors. That was our initial estimate. That is the best judgment we had, and that gave us some maneuvering room in the event of problems in development or funding of NPR as it went down the line.

Senator LEVIN. That gives a lot of maneuvering room because if you got them going and they're going to last so that we plan on 2005, that is plenty of maneuvering room, particularly if just one of those reactors provides more than our requirement, which is what the present case is. If one of the three reactors gives us more than enough——

Secretary WATKINS. Right, and that assumes everything stays constant.

Senator LEVIN [continuing]. And we believe the three reactors are going to last us until 2005, I would think you could hardly say we have an emergency on our hands in terms of the New Production Reactor.

Secretary WATKINS. The emergency is not that we need the NPR today, Senator Levin. The urgency is if we don't start today, we are not going to have an NPR by 2000, and anything beyond the next few years is speculative on those old reactors. So we can sit down with a green eye shade and fine tune this, but we aren't smart enough to know whether that data has error factors in it that are so significant that we have just missed the whole boat. We might find a year from now that we have some other serious metallurgical or other problems, scientific or engineering problems in there, that we just can't foresee because there hasn't been the attention on these reactors that they should have received over the years, that a commercial plant would receive, for example. So we are really starting all over again, you might say.

Senator LEVIN. Did you want me to continue, Mr. Chairman? My time is up.

Senator EXON. Go ahead, Senator. We are into the third round. I have been listening very intently as you have been asking a lot of the questions that I wanted to get into. So proceed if you wish.

Senator LEVIN. Oh, no. My time is over.

Senator EXON. We may come back to some of this. I guess what you are saying, and I have been listening very intently to your answers to the questions posed by Senator Levin, I think what you are trying to say to us, Secretary Watkins, is that we are operating in some very unchartered and unknown waters. Therefore, we would be somewhat foolhardy if we didn't try to build some redundancy into our whole planning for the future.

Now, building in redundancy is going to be expensive, and you might say that under the budget crunch, we don't have to have that redundancy. However, I feel that since we are also in unchartered waters into the future as far as nuclear deterrence is known, it should be obvious and it should be explained to all, and I came away from my visit with the Soviet officials in a whole series of areas convinced, absolutely convinced, that with the serious economic problems that they have in the Soviet Union, they don't know at the present time which way to go.

On the one hand, they are obviously frightened about the proposition of soldiers coming home from Eastern Europe into an already calamitous economic and political situation, where they have no employment for them. I am confident that the Soviet leadership feels, though, that the best bang for the buck, so to speak, as far as their national security is concerned, is in the continued rapid improvement of their nuclear deterrent. I think that they are going to be going that way.

While it costs a lot of money for these kinds of operations, it is very clear that, regardless of how much money they cost, it is still the cheapest way if you are going to depend on your national security for a nuclear deterrent, which I believe the Soviet Union is going to do, for economic if not military reasons. So that is why I think you are pursuing the right course, Mr. Secretary, and I applaud you for it.

LOW LEVEL WASTE

Before we go into some other questions that I have that are directly related to DOE activities and that I know have caused you a lot of concern—and that is high level waste—may I turn for just a moment to a more mundane matter such as low level nuclear waste. I know your agency is not directly responsible for it. It comes under the jurisdiction of the NRC. But I do believe and is it not true that you and the experts in your agency do advise and counsel with the NRC with regard to the safe disposal of low level nuclear waste? Is that accurate?

Secretary **WATKINS**. Yes, sir, it is. We can provide technical assistance there, and we do that routinely. We are, of course, involved in low level waste ourselves and we have a significant background in it. So we do advise on technical issues regarding that. I think Senator Levin asked me last year if we would be available to provide that kind of technical assistance, and the answer is yes. We have teams. We know how to do it, and I think we can advise States if they have technical questions that they want to ask about their own mechanism for handling low level waste.

LOW LEVEL NUCLEAR WASTE SITES

Senator **EXON**. Have you been asked by anyone, including the NRC, whether or not you believe that the current authorization under the State compact arrangements for somewhere between 12 and 15 low level nuclear waste disposal sites is too many given the information that continues to come out with regard to low level nuclear waste? Have you made any study that if you, as an agency, were directly responsible, how many low level nuclear wastes would you think would be ample in the United States?

Secretary **WATKINS**. Let me ask Mr. Duffy. He has information specifically on this because I think the State of Nebraska was one of the ones that asked for some advice in that regard, as to whether or not we had too many.

Senator **EXON**. Thank you. Mr. Duffy.

Mr. **DUFFY**. The State of Nebraska did ask us. The majority of the States feel that the Department of Energy should not take a position one way or the other. They feel that they resolved the issue on a State basis, on a compact basis, and they are proceeding satisfactorily. They don't believe there is any need to change the law at the present time.

Senator **EXON**. You say the majority of the States feel that way?

Mr. **DUFFY**. I said a majority of the compacts that we have dealt with felt that the Federal Government's involvement was not required to assess the number of sites at the present time. They feel that they are making progress and that our intervention would compound it.

Senator **EXON**. Mr. Duffy, do you feel that the States that are expressing such a feeling to you, to leave well enough alone, are doing that because they are totally satisfied with the fact that a low level nuclear waste facility is not targeted in their State? Is there any self-interest there, or do you think it is totally objective on the part of these States that you met with?

Mr. **Duffy**. Most of the States that have discussed it with us are the ones that are targeted for their State to be a site. For example, New York State has a site targeted for New York; Texas has a site targeted for Texas.

Senator **Exon**. Just a minute. Is it right that New York has a site?

Mr. **Duffy**. Yes, sir. When you say have they selected a site or are they targeted for a site, they are targeted for a site because they have chosen to go independent of a compact.

Senator **Exon**. Right.

Mr. **Duffy**. Texas has chosen to go independent of a compact. The Northwest Compact includes four States in the Northwest, and they feel that they are making progress. The site already exists. They feel that there is no intervention required.

Illinois is working on their site, and they are working diligently to solve the problem they have on a constitutional basis.

Pennsylvania and the Appalachian Compact are working on their site, and they felt that there was no need for Federal intervention.

So, in the majority of States that are identified for siting, they feel that they are making progress, and they feel that Federal intervention would compound their issues at the present time. They feel that they have the capability within their jurisdiction to manage the waste, as they have said, in the compacts.

Senator **Exon**. Are you then indicating to me that Nebraska is the only State that has expressed any concern?

Mr. **Duffy**. To us directly, yes, sir.

Senator **Exon**. What was that?

Mr. **Duffy**. To us directly. Nebraska was the only one that asked us to evaluate it and we identified what our position was on it.

Senator **Exon**. And to your knowledge, there has been no other State that has accepted or been targeted for a low level nuclear waste site that has expressed the concern that Nebraska has?

Mr. **Duffy**. To us. That's correct. Yes, sir.

Senator **Exon**. And you don't have any knowledge, as to any other agency, including the NRC, that has been similarly contacted?

Mr. **Duffy**. Oh, they may have discussed it with the NRC. But, I don't believe they want the Department of Energy to be an active participant in determining what their requirements are for their States. In fact, they are moving along on the basis that they can do the design adequately. The area that we are involved in is in greater than Class C waste. We have been identified to take care of the States' greater than Class C waste. We have also discussed with the States the aspect of low level mixed waste, which they don't have the capability of handling at the present time. We will be discussing that in the future with them on how we feel we can participate and solve their problems.

Senator **Exon**. Do you believe, Mr. Duffy, from your knowledge of this that the State of New York and the State of Texas are sufficiently along with their planning and construction to meet the deadline?

Mr. DUFFY. The State of Texas probably has a very small requirement. The State of New York has institutional problems that may interfere with their site selection.

Senator EXON. So the State of New York has a long way to go and is probably not going to meet the deadline?

Mr. DUFFY. That's so in my opinion.

Senator EXON. But you think Texas will?

Mr. DUFFY. I think Texas has the possibility of doing so. In dealing with any low level waste site or hazardous site, there is always the future that holds an uncertainty.

Senator EXON. Thank you, Mr. Duffy. My time is up. Senator Levin.

Senator LEVIN. Mr. Chairman, first of all, on this subject, I am just amazed when you say that no one has expressed, other than Nebraska, the concern to your Department which the Chairman raised. The Chairman and I, I think together, raised this concern with Admiral Watkins very directly to the Department of Energy, about as directly as we can. I think there is probably correspondence as well.

Mr. DUFFY. There may be correspondence with regard to Secretary Watkins. But, from the States and the compacts themselves, there was no request for the Department to take a position on the siting.

Senator LEVIN. Well, I don't think that is quite accurate. I would like you to check your records on that, if you would. I think our Governor has joined in the request that you participate in looking for a mechanism to reduce the number of sites to what we need. We don't need 16 sites, as the Chairman said. I don't know if I have the right number there. Was it 16?

Senator EXON. I remember very well the letter that we wrote. I thought it was to the Secretary of Energy.

Mr. DUFFY. We will look at the file and give you a reply back on it, but, we replied to all letters associated with site reduction specifically. We have no outstanding issues with the States at the present time.

Senator EXON. But, once again, for clarification of the record and so that I know where you are coming from, you stand by your testimony, Mr. Duffy, that to your recollection, no State that is planning to have a low level nuclear waste depository in their State, whether that is a State like New York, that is going to go it alone, and a State like Texas, that is going to go it alone, or any of the other States that have multi-State arrangements, except Nebraska, to your knowledge, has made inquiry as to whether or not we have too many authorized sites for low level nuclear waste disposal? Is that right?

Mr. DUFFY. That is my recollection. Yes, sir. But we will confirm it for the record.

Senator EXON. Thank you.

[The information follows:]

The following is information on the history of correspondence DOE has received from States on the number of commercial low level radioactive waste disposal sites being developed.

Since August 1989, DOE has answered 10 letters of record from Congressmen, Governors, and private citizens regarding the number of low level radioactive waste disposal sites being planned, and are summarized as follows:

- Both the Michigan and Ohio congressional delegations wrote to the Department expressing concern about the number of low level waste disposal sites being developed by States and compacts and asked the Secretary his views on the Department's role in helping States reduce the number of sites. The letters urged the Department to take an active role in helping the States and compacts form agreements that would result in development of fewer disposal sites.
- Senator Carl Levin (D-MI) sent a second letter asking specific questions regarding the Department's position on the number of low level waste disposal sites that are necessary nationwide and believed that the Department should take a more active leadership role in reducing the number of disposal sites being planned by the States.
- Governor Blanchard (MI) wrote to President Bush urging the Federal Government to take action to reduce the number of disposal sites planned by States and compacts. The issue posed in the letter was similar to that raised in the letters from the Michigan and Ohio congressional delegations. Governor Blanchard's letter did not make specific recommendations regarding what he believed the Federal Government should do.
- Ohio State Representative Greenwood wrote to the Department regarding the development by States and compacts of new facilities for low level waste disposal. His letter was critical of the current national policy on disposal of low level waste and the proliferation of the number of sites.
- Five Senators jointly signed a letter to the Secretary urging that the Department not act upon requests it had received to reduce the number of disposal facilities being developed by the States and compacts.
- Senator Gramm (R-TX) referred a letter from the Texas Low Level Radioactive Waste Disposal Authority which expressed concern about the role of the Department of Energy in reducing the number of low level waste disposal sites being planned by States and compacts.
- Governor Gardner (WA) wrote to the Secretary of Energy notifying him of actions taken by Washington State to reduce the number of low level waste disposal sites being planned by States and compacts.
- Two public citizens have also written expressing concern regarding the number of disposal sites being developed.

DOE POSITION

- It has been the Department's position in responding to these letters that under current Federal law (P.L. 99-240), States can and should take the initiative for cooperation on disposal of their low level waste but also that DOE stands ready to assist compacts and States in evaluating economic and technical impacts of any proposed arrangements that will improve such cooperations.
- Although the three letters from Michigan and Ohio have conveyed strong opinions about the limited role of the Federal Government and DOE in this matter, our assessment, based on the States' responsibility under the law and opinions expressed in these letters, indicates that the majority of States is making progress toward development of new disposal sites and would vigorously oppose intervention by the Federal Government into these sensitive State processes.

Letters Received by DOE Concerning the Number of Low Level Radioactive Waste Disposal Sites Being Planned

Date Incoming	From	Date Response	Signed By
August 4, 1989	Michigan congressional delegation—Dingell, Pursell, Riegle, Carl Levin, Upton, Traxler, Carr, Henry, Vander Jagt, Wolpe, Ford, Hertel, Bonior, Conyers, Kildee, Davis, Broomfield, Sander Levin, Schuette, and Crockett.	11/2/89	Watkins
November 22, 1989	Ohio congressional delegation—Stokes, Kaptur, Pease, Eckart, Hall, Wylie, Feighan, Applegate, Gillmor, Kasich, Luken, Oakar, Traficant, Regula, Oxley, Miller, Sawyer, Dewine, and Gradison.	1/29/90	Watkins
December 13, 1989	Governor Blanchard, Michigan.	3/30/90	Watkins

Letters Received by DOE Concerning the Number of Low Level Radioactive Waste Disposal Sites Being Planned—Continued

Date Incoming	From	Date Response	Signed By
December 20, 1989	Ohio State Representative, Greenwood.	2/13/90	Duffy
January 4, 1990	Senator Carl Levin, Michigan.	3/16/90	Watkins
January 25, 1990	White House referral from Illinois public citizen (Breeze).	3/14/90	Lytle
February 15, 1990	Five Senators—Bryan (NV), Dixon (IL), Reid (NV), Adams (WA), and Gorton (WA).	4/27/90	Watkins
March 7, 1990	Letter from Michigan public citizen (Butler).	3/30/90	Lytle
March 16, 1990	Governor Gardner, Washington.	4/20/90	Watkins
Undated	Senator Gramm (TX) referral of letter dated 2/5/90 from Texas Low Level Radioactive Waste Disposal Authority.	5/14/90	Duffy

Senator EXON. Senator Levin, go ahead.

Senator LEVIN. I just want to say that I have gone on record with the Department of Energy before and I will do it again. Michigan believes we have more sites than we need. The Governor of Michigan feels that way. I have expressed that thought on behalf of my State. There is testimony in the record, I believe from the Department of Energy, agreeing that we don't need 16 sites that I obtained from the Department of Energy. You can check the record all you want, and I hope you will. But I am expressing, and I know my Governor agrees with me, as did the last Governor, that Michigan believes we have too many sites, many more than we need, and has requested the assistance of the Department of Energy to come up with a process to reduce that to the number that we do need.

I'm not sure that we can work out that mechanism. But at least we need your good offices to try. I think Admiral Watkins and I have had a discussion about this, and I understand the sensitivity of it. So that everyone is clear, no one is trying to change the rules to include States that have not been included.

I can understand why the majority of States would not want to change the rules, because they are off the hook. But there are 16 or so States that are on the hook, and I believe most of those States would welcome a reduction in the total number of sites if you could work out a fair mechanism to determine how you would select the fewer number of sites. But did I understand your statement, Mr. Duffy, that you said a majority of States don't want to change?

Mr. DUFFY. The majority of compacts. The compacts are the combinations of States, and the majority of compacts have identified that they do not want the Department of Energy's Federal intervention in the process of selecting their sites at the present time because they are moving in the direction that——

Senator LEVIN. But that's not the issue that the Chairman raised. In all fairness to you, Mr. Chairman, I think the Chairman has raised the question of whether or not the Department of Energy should assist in the process of figuring out if we can reduce the number of sites to what we need in this country, not whether the Department of Energy's help is requested in selecting the particular site in a compact area.

Senator EXON. Before you answer that, to emphasize my point once again, 16 low level nuclear waste facilities are now authorized. Is that necessary, and do we need that many in view of the information that has come forth in the last few years since the compact concept was authorized by Congress? Isn't that the question we are trying to get to?

Mr. DUFFY. If you go on the basis of the amount of waste generated, obviously in the last 4 years the waste generated has gone from about 2.5 million cubic feet a year down to this year's projection of about 1.1 million cubic feet. If you went just on that pure projection, you would say that the number of compacts would be economically not feasible for 11. There are 11 compacts that are out there. That would say that, economically, you should not have that many.

Senator EXON. That, again, Mr. Duffy, is why the Senator from Michigan and the Senator from Nebraska are saying are you in a position or will you be—although I know with all of your other problems it is something that you don't wish to get involved in—are you in a position, if a formal request were made to you, to lend your expertise on how many, a minimum and maximum, low level nuclear sites you think are necessary given the information now at hand?

Mr. DUFFY. We could always make that decision. It would be disruptive to the process. As you indicated, we don't need that kind of disruption with the problems that we have. But, if somebody asked us for a technical opinion, yes, we could give it. We have so many other challenges in the area of waste that if we got one more challenge with respect to siting, the Department of Energy's credibility on siting, as you clearly recognize, for WIPP, Yucca Mountain characterization, the siting of our Nuclear Complex for Complex 21, we have not demonstrated that we have the capability to site a lot of things. So, for us to get involved in that would just be a compounding issue.

Senator EXON. Mr. Duffy, I just want to compliment you. You parrot almost exactly what I think is the attitude of your boss, the Secretary. I have discussed this with him on many occasions, and I recognize and appreciate your reluctance, with all the other problems we have, to go further. But we are going to continue at least to see if we can get your expertise involved in this whether you like it or not. [Laughter.]

That is our position, and unless you want to say something more, let's go on to some other things.

Secretary WATKINS. He doesn't want to say anything more, thank you.

Senator EXON. I thought that would be the answer, Mr. Secretary. [Laughter.]

Carl, have you finished?

Senator LEVIN. No, I have a few more questions.

Senator EXON. Then go ahead.

Senator LEVIN. Thank you. I have just a couple of more questions. This is not a siting issue. I will just repeat it. The question is how many sites we need, not where they are. The Department of Energy has said that we don't need this many sites. To say that it is disruptive to try to figure out how to get from 16 down to the number of sites we need means we are going to waste a lot of money because we are not willing to take a step to try to figure out if there is a process to do that. Now, I don't want to threaten any State that is not on the hook. But, for heaven's sake, we ought to spend some time, it seems to me, to save some money in this country. I am going to continue to press this, as is my Governor. But now let me go back to the other issue, just for two quick questions.

MISMANAGEMENT OF CONSTRUCTION SITES

There was a story in the New York Times on Sunday, Mr. Secretary, that I am sure you are familiar with, indicating or alleging that there is a tremendous amount of waste at the nuclear construction sites that we have going on. I am not going to read any portions to you. It was a front page article and I am sure it has been brought to your attention. Let me give you one quick example. One unidentified craftsman says that instead of working an 8-hour day, they are typically working 40 minutes and getting paid for an 8-hour day. There are a lot of allegations in here. I am wondering whether you can comment on the record now, and for the record later could you give us a more detailed response to the many allegations? But would you give us your general reaction here, if you would.

Secretary WATKINS. Well, I think, again, when a reporter goes down and selects his clients for discussion and so forth, he is going to come up with perhaps a different perspective than I have.

I just received a briefing from Westinghouse and our own people on the start-up plans. We still have problems in there. We know them all. He is reiterating the problems that we have identified on start-up. We have about 12 areas of intense effort. We know every single nit and pick that has to be accomplished before start-up. They have all been starred as start-up items. Other items have been laid on the table for long-term improvement and put into priorities.

We know that we have technical problems in the rod drive mechanisms that we have to resolve before start-up. We know that we have some seismic issues that we have to resolve before start-up. The Defense Nuclear Facilities Safety Board (DNFSB) has given us some challenges before start-up. All of those are in our start-up plan.

If you ask any operator on the floor, that operator cannot possibly have the perspective that the management has on the overall scheme of things. There is no question in my mind that when we started this project, we've probably put more dollars and resources in there than we can effectively manage, and I don't say that we are 100 percent efficient managers down there. But we are getting that way. We are trimming down. We are putting in significantly less dollars in fiscal year 1992 in P-Reactor, just to put it down and out of commission. We are beginning to really fine-tune the budget execution problems which, frankly, existed down there, as they did at Rocky Flats.

I had to send in a whole budget management team to make sure we didn't have more engineers down there than we actually needed and that we are all gainfully employed. And as we cut down in P and L-Reactor loading, we cause some morale problems down there, some expectations on individuals that they were not going to be employed any longer as operators in those plants. We all recognize that. This is part of our start-up plan, to make sure that we understand those things.

So I don't see anything new in this article that we haven't done. We have certainly been very open with this committee and everybody else that we have had some significant management problems that we have had to overcome, stemming from 40 years of a lousy contract and poor contractors paying no attention to things like Three Mile Island, to National Academy of Sciences studies, and so forth.

I had to inject in there probably more resources than either the Department of Energy or even Westinghouse could manage efficiently. Now that we look back at our audit trail, I could say yes we probably were only 80 percent efficient.

Senator LEVIN. Because of the prominence of the article, I think it is important for the record that you indicate what factual disagreements you have. Obviously, you should have an opportunity to do that and it would be useful. Those are serious statements that are made in the article. If you would do that for the record, it would be helpful.

Secretary WATKINS. Those statements are not more serious than ones I've made myself, Senator Levin, about those reactors down there. They were operating unsafely.

Senator LEVIN. Well, tell us what factual statements you disagree with.

Secretary WATKINS. But there are a lot of statements that are in there that are not in the right perspective and that come from a very isolated, individual point of view that he has carefully selected out and decided those are the only people he is going to listen to and report about. This is not unusual in the media.

Senator LEVIN. I'm not arguing with you. I just simply think it is important that you have an opportunity to lay out your differences.

Secretary WATKINS. Well, we are trying to do that now. We have a lot of other things to do in the Department than to respond to Keith Schneider every 5 minutes. I have an op-ed piece that is going to the New York Times.

Senator LEVIN. On that subject?

Secretary WATKINS. On that subject.

Senator LEVIN. Then that will be fine. That will do it. That will handle it.

TRITIUM AND REDUNDANCY IN PRODUCTION REACTORS

One last point and then I'll be done. The Chairman has raised an important question, going back to tritium for a moment, and that is the redundancy issue. We obviously agree that we have to have some redundancy in that program. There is redundancy right now. As a matter of fact, last year you wanted two new plants for redundancy, and that is now down to one new plant. It was argued just a couple of years ago that we had to have two new plants for redundancy. So we are making some progress. But there is redundancy. First of all, you have the other reactors at Savannah. That is some redundancy. The L-Reactor, for instance, is a redundancy.

Second, you have the fact that the tritium adds to the yield, as I understand the purpose of tritium. So it's not a question of whether or not we have nuclear weapons. It is a question of whether we are willing to take any risk as to their yield in order to save hundreds of millions of dollars.

Secretary WATKINS. But that is extremely important in the design of the system, Senator Levin.

Senator LEVIN. I understand that. I am not minimizing it.

TRITIUM AND PERFORMANCE REQUIREMENTS

Secretary WATKINS. We are not doing it just to enhance yield. We are trying to say we have to design weapons to get into certain bodies that carry those weapons, and we happen to be more sophisticated than the Soviet Union, so tritium in our weapons becomes critical or we won't have the kind of weapon that this country needs to maintain a credible deterrent.

Senator LEVIN. That's right. You may have a much lower yield to have a size which is smaller.

Secretary WATKINS. If you have a large bomb, then you don't need the tritium.

Senator LEVIN. Right. I understand that.

Secretary WATKINS. If you have a small bomb with the same yield, you need the tritium.

Senator LEVIN. What it comes down to is yield. Yes. You may have to give up some yield to have a smaller bomb without tritium.

Secretary WATKINS. Exactly.

Senator LEVIN. That's my point. It does not go to the question of whether or not a system will function. It has to do with the yield of that system. I am talking here about risk.

Secretary WATKINS. To achieve certain targeting responses to the Soviet stockpile.

Senator LEVIN. And it is essential that we have that capability. But, Admiral, all I am saying is, going back to the yield question, if you need a smaller weapon, if you didn't have tritium, you would have a smaller yield, but you could still have a smaller weapon. What tritium does is allow you to have a greater yield in a smaller weapon.

All I am saying is that I agree with you and the Chairman that we need some redundancy. We have some redundancy—in the other reactors, in the fact that the weapons function. It is a question of how many weapons we would be able to use or how much yield in a particular sized weapon. It's not like you're not going to have a nuclear deterrent. It might be a slightly smaller nuclear deterrent if everything went wrong with your tritium production.

Secretary WATKINS. If you're saying, then, that you could let the stockpile degrade and you would still have a yield——

Senator LEVIN. No.

Secretary WATKINS [continuing]. Of course you would still have a yield. But would you have a credible deterrent? The answer is clearly no, in my opinion.

Senator LEVIN. The answer is you would have a slightly less credible deterrent.

Secretary **Watkins**. I think it would be significantly degraded. You would have no confidence in your strategic stockpile. You would have virtually no confidence in it.

Senator **Levin**. In other words, without tritium, you would have no confidence in the stockpile?

Secretary **Watkins**. To the degree that we rotate the weapons back for resupply of tritium, that's correct, sir. The curve is very sharp. I think you have seen that curve. The fall-off is very, very severe. It is not just marginally degrading.

Senator **Levin**. Are you talking about in yield?

Secretary **Watkins**. I'm talking about the performance of the weapon.

Senator **Levin**. Okay. There is one other redundancy, too, just to list them, because I happen to agree that you need redundancy. The other redundancy is that we are not the only country that produces tritium. If everything went wrong with our back-up, we're not the only producing country. Our allies, as I understand it, produce tritium. Is that not true?

Secretary **Watkins**. No, sir. We have already gone through all that, and the answer is that it is not adequate.

Senator **Levin**. England does not produce tritium?

Secretary **Watkins**. Yes, sir, they do. But it is not adequate to meet the U.S. stockpile and their stockpile needs. In other words, they cannot generate enough tritium there and in France to backstop us. It would only be marginal, very, very marginal.

Senator **Levin**. Admiral, I am not suggesting that they can stock our tritium needs. What I am saying is if you are looking for redundancy, if you are trying to look at what is the risk of something, the risk is this. First of all, you want to see is K going to work. That's fair enough. Is K going to work and what is its life cycle? Then you have some redundancy in case there is a problem. You've got L. Then you've got some other redundancy, which is you can get some supply from allies. I said "some." I'm not saying it's enough to fit your whole stockpile. I'm saying some redundancy.

Secretary **Watkins**. It's not even close, Senator Levin.

Senator **Levin**. Okay. My final question is this. What is the deadline, in your view, for the new reactor to be on line? Give us the last possible year that you are comfortable with.

Secretary **Watkins**. I can't do that, Senator Levin. I just simply cannot do that. I can tell you right now that we ought to be shooting for as early an introduction of the New Production Reactor as possible. Right now, that is the year 2000. We are on the margin in going with these existing reactors even until then. I mean, we put $1 billion more than the prior administration planned in trying to get these reactors safe.

Senator **Levin**. How do you say that we are at the margin if the K-Reactor is a——

Secretary **Watkins**. We are on the margin of performance of old reactors. They are 40 years old.

Senator **Levin**. But you say you won't know until next year——

Secretary **Watkins**. Right.

Senator **Levin** [continuing]. What K's life is. How can you now say that we are on the margin when you won't know until next year whether——

Secretary **Watkins**. We're on the margin because they're old reactors, they are old technology. We have to put this incredible injection of new technologies in there just to get it to 50 percent power. We can't go above that for a lot of design reasons, and we should not have been going above that before. We are just now applying modern technology that should have been applied at least 10 years ago to those reactors to make these determinations.

So you are asking me to project something here and I cannot do it that definitively. It isn't a simple budget item. It is a very complex technical item. It has to do with the metallurgy. It has to do with the design of the control rod mechanism. We don't know all these answers yet. So that is why we have to move expeditiously on NPR, because of the unknown.

If, in fact, this does not go well by 1995 and we have not started NPR, then I am sure this committee would be the first to ride my case, if I were still Secretary of Energy, and say where were you on the prudent contingency planning for this. I don't think this Nation wants to go through this horror story once again.

Now, I had the blessing of a START agreement, something that really worked for the first time, to cut it down. Had that not happened, and if I had to meet old stockpile requirements, we would be in trouble. So I am more or less the beneficiary of an aggressive START effort. That, really, is what saved us here.

I don't know what the future is going to be, but we had better not plan on these reactors operating much longer. And, I am stretching the limit to put in this kind of money to keep old things working. We don't want to do that forever.

Senator **Exon**. Because we have no other option.

Secretary **Watkins**. We have no other option, sir.

Senator **Levin**. Let me just try to get one word in here because that was a long answer. We will know at the beginning of next year, then?

Secretary **Watkins**. We'll have a better feel, Senator Levin, than I do today. That is all I can tell you.

Senator **Levin**. Okay. That's fine. You'll have a better feel at the beginning of next year when the K-Reactor is started as to what the production is going to be of that reactor and what its life is likely to be. We don't know that now?

Secretary **Watkins**. No, sir, we don't.

Senator **Levin**. And we will know it next year?

Secretary **Watkins**. We will have a better feel for it, and I can give you better projections. If I say that it's going to be January—

Senator **Levin**. But you sound awfully certain right now, and yet we don't know what K is going to produce until next year, and we'll be in a position to make a much better projection after we know what K can produce and what its life cycle will be.

Secretary **Watkins**. That's correct. And in the 1993 budget, you will see that reflected in some movement in one direction or another, because we will have started up the K-Reactor, and by January I will probably have some kind of feeling for what I ought to do with the L-Reactor. My expectation is that L-Reactor must be funded to a certain level to maintain a 12-month start-up. We have enough tritium in the margin right now, in the stockpile, because of reduction of old weapons, to permit us, then, to make a better assessment without pressures of having to feed tritium from the reactors into the system. We can still live with the mining of the tritium out of the old weapons for the next couple of years.

Senator Levin. Thank you, Admiral.

Senator Exon. Thank you, Senator Levin. Let me just make a comment about the New York Times article by Keith Schneider. I notice in that article something which I will quote: "But critics of the plant and the Energy Department, including congressional investigators . . . ." I think those congressional investigators and the leaks that continually come out on this proposition are not part of the Armed Services Committee.

There are reporters who shy away from factual statements and I think an objective statement is that we on the Armed Services Committee have the prime responsibility—we have the prime responsibility, notwithstanding the actions of other committees of Congress—with regard to maintaining our nuclear deterrent. I am afraid that some national reporters who are widely read just don't trust us because they think that we will make any sacrifice at any cost to over-build our tritium facilities. I think that is an unfair, a grossly unfair attitude that some national reporters have, with their ability to put stories on the front pages of leading newspapers. So the "congressional investigators" I think did not come out of the Armed Services Committee.

Let me try, if I can, to put into specifics what Senator Levin is trying to get to, as I understand it. Let me phrase the question in this way, if I might, Mr. Secretary. What percentage of the tritium requirement, and I would say maybe the minimum tritium requirement, can be maintained with, let's say, 90 percent confidence when relying only on the K- and L-Reactors?

Secretary Watkins. We can maintain goal and we can build tritium reserves that the President has demanded us to keep, a prudent reserve. With the lack of flexibility we have in the system, we don't want to get into a situation again where if we have to maintain stockpile at a constant level, we are going to then be faced with a situation of a deterioration of that stockpile's effectiveness, because we simply can't get back on line with our one redundant system that is in some kind of "sick leave" condition that has to be brought back to life over a period of time. That is kind of where we are going. It is not a ready redundant system. It is a poor man's redundant system because of budget constraints.

Senator Exon. I guess all of us should understand, Mr. Secretary, and I believe that I do, that, indeed, we are in unchartered waters here, and nothing is certain. Therefore, we have to err, if anything, on the cautious side. This is because I happen to feel that tritium production is absolutely critical to our future nuclear deterrent. Let me shift to another subject now.

Secretary Watkins. Mr. Chairman, I would like to say, in all fairness to Keith Schneider, that he is a good reporter. But, really, in this case we are dredging up all the old issues again.

Senator Exon. That's been going on now for 3 or 4 years, hasn't it?

Secretary Watkins. So we have no credibility in the Department of Energy until we do something. We have to get Rocky Flats on line, or WIPP opened, or a reactor up. I understand that. But this constant harangue that somehow we are trying to deceive the American public, that we are trying to deceive them on the way we manage down there and so forth—we are not trying to deceive anybody. We have a tough, rigorous, 25,000 person workforce, some of which is not being managed as effectively as it could be down there. We know that. We have just run an audit on it. So we tell people these things, and the first thing you know is we are hammered over the head with our own openness. So it is a double-edged sword.

I don't mind that a little bit. But for people who really are not close to this, as my team is, to really get in there—and we're not going to let this committee down, I'll tell you that. That reactor won't start unless it is safe, and we know what "safe" means. We know what all the engineering has to be, and all the performance. We have had the commercial sector in there. We have had advisors. We have a very fine Defense Nuclear Facilities Safety Board that Congress set up in there. We know what we are doing, and we are not going to start that unless it is safe.

Our longest pole in the tent now is not technical or anything else. It is threatened litigation. These kinds of articles do nothing more than aid and abet the litigators to come on in, and they will come in. You will see them come in just before we announce start-up. They will come in and try to get a court restraining order, and it will be another big drill. It is not because of environmental concerns. No. It is because they don't want nuclear power or nuclear weapons as a deterrent in this Nation, period. That's what it's all about. They have built the case and built the case in the press every time as though we are not managing it right. But that's not true at all. Not now. It was true in the past.

I will stand behind any safety review, and if this committee wants to establish another one, it is okay by me. But those reactors are going to come up this year and they are going to come up safely unless we have an unsuccessful litigation in some court case about cooling towers or one thing or another.

I recognize that we don't have a very good track record behind us. But to keep saying that constantly is not helpful when, in fact, we are probably doing more than this Department has ever done. You have $4 billion going into Environmental Restoration and Waste Management. I have another billion dollars going into safety, environmental health, and security upgrades at Savannah River, and it is impressive down there.

When we start up this thing, we will have brought morale up. I'll be down there. We will hoist the Department of Energy and the Westinghouse flags. We have a special flagpole up there to do it. All of a sudden, this Department will be turned around by that one operation alone. That is the kind of spirit I need and the kind of support I need. I don't need people telling me how bad it has been for 10 years. I have been through that honeymoon. We are on the other side of the coin now and we are moving in the right direction across the board.

Senator **Exon**. Mr. Secretary, I have been a strong supporter of yours from the beginning. I remain convinced that you are trying to do the right thing, and I wish that we could have a more objective understanding of the extreme difficulties that you inherited down there. Speaking for at least this one Senator, I think you are doing an outstanding job.

Secretary **Watkins**. Thank you, Mr. Chairman.

Senator **Exon**. But if you would, just be a little more forthcoming on nuclear low level waste. [Laughter.]

Secretary **Watkins**. I have just turned that over to Mr. Duffy. [Laughter.]

DUAL COMPENSATION

Senator **Exon**. Mr. Secretary, last year this committee initiated legislation to authorize a waiver of dual compensation penalty against further government service by military retirees in order to enable agencies, such as the Department of Energy and the Department of Defense, to fill critical positions with skilled personnel. It has been reported that OPM will require extensive information from the agency, such as a documentation of recruiting efforts and the response rates for each position before approving a waiver, which could hamper your ability to use the authority on a timely and effective basis. What progress has been made to date in implementing the legislation and what has been the Department of Energy's experience in obtaining waivers to date?

Secretary **Watkins**. Well, it has been slower than I would have wanted, Mr. Chairman. We have had five positions and people at OPM for some time. I have talked to Ms. Newman about this, and she has been very responsive to me. She was very helpful in getting the legislation. But, somehow, the bureaucracy finds it very difficult to make it easy for us to take advantage of this. It seems as though the bureaucracy is putting more and more constraints and strictures on what we have to come up with, and I am not sure we are going to win any. This is my problem.

I talked to Ms. Newman just last week about it. I said can't we free up the five I have, three for critical positions and two for double dipping waivers. They will be the precursors, then, to a flood that I have of, say, 40 or 50 that I then want to move on. We are going through the test phase, you might say, and the precursor to procedures and processes to follow. But if it gets so strict that we defeat the very purpose that we want from the intended outcome in the legislation, then I think we have gone too far.

I understand that this is anathema to some in the Civil Service, but we are talking about a handful of people here. We are not talking about overhauling the entire Civil Service. We are talking about 40 or 50 people at the Department of Energy that can make my programs ring. He needs five right away, five ex-military, highly qualified people in waste management, and we could get those quickly with the new legislation.

I am hopeful that we will be able to spring these things out of OPM and move. However, I am just very worried about, perhaps, even the slightest perception on the Hill that somehow we might be too lenient. I would rather make some mistakes and get the wrong person on board, but to get them on, so that we can begin to move in the direction Congress intended, rather than to hold back because we are so afraid that we might have a GAO investigation that Joe Smith came aboard and was paid too much. This is my worry. If we are talking about 40 or 50 people, we are not going to break the bank. I really need these people desperately. So I am a little worried that we have not moved quickly enough.

DRELL PANEL REPORT

Senator **Exon**. Mr. Secretary, the Drell Report on weapon safety was released some time in December, as I remember it. Has the Department of Energy prepared any written response or action plan to address the issues that were raised in that report? Where are you on that?

Secretary **Watkins**. Yes, sir. We have obviously taken the report very seriously. Secretary Cheney and I have agreed with the thrust of that report, and we put out a directive to the Nuclear Weapons Council earlier this month and directed them to give us the answers to about 8 or 10 recommendations on that Drell Report.

We have basically accepted them all in concept. We have a difference of opinion on organizational structure. But, other than that, we have moved out aggressively. I think it is a very good report. I think it is in perspective, and I think some good things will come out of it for the long haul.

This is very much in keeping with Secretary Cheney's and my establishment of the Safety Committee of the Nuclear Weapons Council, which was a new start last year, to begin to deal more aggressively with the long-term safety issues in the nuclear weapons stockpile. In particular, as we get smaller and we get new systems, we want to go into the kinds of things that we would have liked to have gone into had we had the technology 10 years ago.

DEFENSE NUCLEAR FACILITIES SAFETY BOARD (DNFSB) RECOMMENDATIONS

Senator **Exon**. Mr. Secretary, on March 27, the Defense Nuclear Facilities Safety Board issued a recommendation that each item identified for correction in the Reactor Operations Management Plan be formally responded to by the Department of Energy. This response would take the form of a narrative discussion of the issues, the steps taken to resolve it, and the reasons for concluding that the issue has been resolved.

In addition, the Board recommends the Department of Energy fully review and concur in the determination of each case. How will the Department of Energy be responding to this recommendation?

Secretary **Watkins**. Well, first, we have accepted every recommendation to date submitted by the Defense Nuclear Facilities Safety Board, including that one. What I would like to do to respond to that, Mr. Chairman, is ask the Assistant Secretary for Defense Programs, Mr. Claytor, to give you chapter and verse on that specific recommendation.

Mr. **Claytor**. Mr. Chairman, we have two recommendations in from the Defense Nuclear Facilities Safety Board that we will have to respond to. This is one on the reactor operations management plans at Savannah River, and we are in complete agreement. We have had discussions with the Safety Board on these. This is a matter of how we document the record for our reactor operations management plan. They have suggested that we make some improvements in that, and we will proceed to do that. So we are in complete accord and there is no problem here. This is part of our start-up operations for those reactors at Savannah River.

Senator EXON. Thank you very much, gentlemen. I have just one last question for the record. You have been very responsive this morning and we appreciate it. There will be some additional questions for the record.

FERNALD, OHIO AND RICHLAND, WASHINGTON

Mr. Secretary, let me ask you this. The Department of Energy is currently embroiled, as I understand it, in a rather heated debate with the Environmental Protection Agency over the Department's performance at Fernald, Ohio, and Richland, Washington. When will this dispute be resolved in your opinion?

Secretary WATKINS. Before May 13, sir. We have set a deadline date.

Senator EXON. Of this year?

Secretary WATKINS. This year. Yes, sir—1991. It's not a simple issue. It is a very precedent setting issue. We have to understand about fines and penalties between Federal agencies. In this particular case, you might say it's robbing Peter to pay Paul, taking money out of the defense clean-up to put into a fines and penalty box away from defense clean-up.

We are trying to negotiate this now with the Environmental Protection Agency. We have had a lot of discussions with them, with Environmental Protection Agency regional, in their case. I think we will come to grips with this in the very near future. I think we have an "agreed to" protocol, but this has given rise to how do we handle these situations in the future. Is this in the best interest in all cases to handle it this way? And yet, we want to keep our own feet to the fire. We are very reticent to recommend against it, but we want to make it effective, so that we are not taking money out of the clean-up to put it into some other package.

So the question here is did we have a violation. We think in one case we had a technical violation by not informing the Department of Justice on an issue, for example. On the other hand, we think our hearts were in the right place by saying we'd like to put a few hundred thousand dollars into a water project on the outside of the base to help in that regard, additional fresh water supplies for people whose wells had been contaminated.

That apparently was in violation of procedure. So I think we are talking about a technical set of issues. Our hearts are in the right place. I think we are both headed together now in the right direction with the Environmental Protection Agency. We will have that resolution soon. But, it is precedent setting for the entire Department from the point of fines and penalties—of one agency fining another agency in a situation like this.

Senator EXON. Mr. Secretary, thank you very much. Without objection, the article in the New York Times that has been referenced at several points in this hearing is made a part of the record. People reading this record may want to know just what we were talking about there. So it is made a part of the record.

[The information follows:]

The New York Times

APR 14 1991

Nuclear Complex Becomes A Huge Magnet for Money

Questions Arise Over Billions for Savannah Site

P. 1

By KEITH SCHNEIDER

Special to The New York Times

AIKEN, S.C. — Despite new projections for a much smaller nuclear arsenal, and increasing concern about controls on spending, the Department of Energy is pouring billions of dollars into the Savannah River Site in a frantic effort to repair and modernize the bomb-making equipment there.

Energy Department officers here and in Washington cite Savannah River as the highest example of the agency's new ability to plan effectively, manage complicated projects and do top-quality work. As the department proceeds with the closing of nuclear weapons plants in Washington State, Ohio and Colorado — a response to the end of the cold war as well as to deteriorated equipment — Savannah River will become vital as the dominant supplier of radioactive fuel for nuclear weapons in the 21st century, its supporters say.

But critics of the plant and the Energy Department, including Congressional investigators and some plant employees, say that behind Savannah River's high barbed wire fences the Energy Department is wasting huge sums because of intractable problems with communications, planning, design and construction.

From daybreak to nightfall, yellow bulldozers, groaning dump trucks and thousands of workers in hard hats raise a pounding din across the 300-square-mile Federal reservation, one of the biggest construction sites the South has seen.

The tide of money flowing out of Washington — plant officials disclosed this month that the plant's budget is more than $2.2 billion this fiscal year, twice what it was two years ago — has nearly doubled the number of Savannah River workers, to 24,000.

A Local Building Boom

The money tide has washed up on the shores of Aiken and surrounding communities. Clouds of red dust boil up from the unfinished parking lots of shopping centers, and pine woods are being cleared for hundreds of homes.

About $1 billion has been spent the last few years on a plant to turn liquid radioactive waste into glass for permanent burial, $96 million on a plutonium processing plant, $72 million for a reactor cooling tower, and hundreds of millions on cleanup operations.

But the biggest spending, well over $2 billion has since late 1988, has been to repair three old reactors — two of which the Energy Department now says it does not need because of the number of nuclear weapons is being sharply reduced.

And despite hundreds of millions of dollars spent on training, operators remain incapable of running the reactors safely, according to independent investigators hired by the Energy Department's chief safety advisory board.

More Billions at Stake?

Inspectors from the civilian nuclear power industry have found rampant weaknesses in the plant's programs to safeguard workers from radiation despite three years of training, new equipment and efforts to improve monitoring, all of which have cost tens of millions of dollars.

The plant's critics say these entrenched problems should be a warning to Congress and the White House. Unless there is much keener supervision of the agency's planning and stricter limits are placed on its spending, the critics say, more problems like those at Savannah River are certain to arise, and tens of billions of dollars could be misspent.

The Energy Department has proposed a huge program, estimated to cost $200 billion to $300 billion and take at least 30 years, to take old nuclear weapons plants out of service, clean up hundreds of square miles of ground contaminated by chemical and radioactive wastes and build a more compact nuclear weapons industry.

"Somehow, we have to get this agency under control," said Representative Mike Synar, Democrat of Oklahoma and chairman of the House Energy and Commerce Subcommittee on Environment, Energy and Natural Resources, who has spent years investigating the Energy Department.

Workers' Accounts Supported

In interviews, craftsmen at Savannah River, who refused to be identified because they said they feared reprisals, described how in a typical eight-hour day they may actually work 40 minutes. The rest of the time, they said, workmen collect signatures and authorizations for tools, blueprints, work orders and other documents now required for any task at the plant.

James S. Moore, the president of the Westinghouse Savannah River Company, the Westinghouse subsidiary that has operated the plant since April 1, 1989, confirmed the workmen's accounts. Mr. Moore said Westinghouse is instituting rigorous and formal work procedures at the plant that are standard in the nuclear industry but which were never part of Savannah River's operations until the late 1980's.

"We have imposed a whole new system of formality and discipline," Mr. Moore said. "Maybe we've got the pendulum swung too far in a lot of ways."

In other interviews, engineers said the Energy Department's ever-changing technical requirements for construction and wavering predictions about the future demand for nuclear warhead materials has led to billions of dollars in added costs.

Engineers from Westinghouse and its partner at the plant, Bechtel Inc., typically spend millions drawing up designs and safety analyses for the Department of Energy only to have the plans scrapped, they said.

The most graphic example of the money wasted, said the engineers, has been the project to repair three old reactors that are the nation's sole source of tritium, a radioactive gas that increases the explosive power of nuclear weapons. Because tritium decays, it must be periodically replenished for weapons to work properly.

Three years ago, when the reactors were shut after evidence of reckless operations, the Energy Department proposed a $250 million project of repairs and retraining. Congress approved financing after being told by the Energy Department and the Pentagon that unless all three reactors were restarted immediately, the nation would face a security emergency.

Westinghouse said early this month that the cost of the repairs has now soared to $2.6 billion and is climbing. Energy Department engineers here also say that only one of the nuclear reactors, operating at just 40 percent of its capacity, is needed to meet all tritium needs.

But even that assessment is disputed by the General Accounting Office, an investigative arm of Congress, which found that none of the reactors at Savannah River were needed to maintain the arsenal. In a study issued in February, the accounting office said enough tritium was available by recovering the gas from the thousands of warheads being retired.

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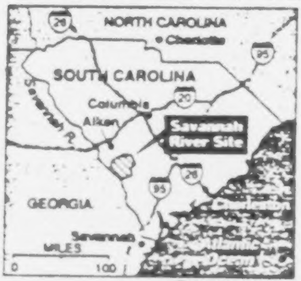
The New York Times

APR 14 199

'We've Got Other Problems'

As for the two other reactors, Westinghouse wants to spend more than $1 billion to finish repairs on one and then place it on standby, a designation that makes it almost certain not to be used again. The third was permanently shut in January after $800 million had been spent on its repair.

"We've got other problems in this country that could use that kind of money," said Frances Close Hart, the chairwoman of the Energy Research Foundation in Columbia, S.C., and an outspoken opponent of the plant.



The New York Times

Savannah River has become the South's biggest construction site.

Steve Richardson, deputy assistant secretary for nuclear materials at the Energy Department, said in an interview that the agency's decision to operate just one of the reactors was based on projections of the demand for tritium that are included in a secret Pentagon study signed by the President. "We are the contractor for the Pentagon," said Mr. Richardson. "They tell us what's needed and we deliver the goods."

But Congressional experts, among them Senator John Glenn, the Ohio Democrat who is chairman of the Senate Governmental Affairs Committee, said Energy Department officials are not being candid. "I hope we won't be forced into micromanaging the nuclear weapons industry," said Senator Glenn. "We're going to need to start in all over again and find out where the money is going and why things are not being accomplished better."

Senator Glenn said he intends to ask Energy Secretary James D. Watkins about problems at Savannah River in a hearing Thursday before the Senate Armed Services Committee.

Reasons for Big Problems

One reason for the problems at Savannah River, according to Mr. Moore and other plant executives, is the sheer volume and complexity of the work. Savannah River's engineers generally design and build one-of-a-kind machines to process radioactive liquids and gases so deadly they must be confined inside concrete canyons and handled with remote equipment.

Another difficulty at Savannah River, say engineers, is that the Energy Department consistently underestimates costs. Overruns of hundreds of millions or billions of dollars are now part of the agency's way of doing business.

Millions are spent each month for training, safety courses and other programs to improve the performance at Savannah River. None of the courses are more important than the one to retrain the reactor operators, say Westinghouse executives. But independent investigators dispatched by the Energy Department's chief independent health and safety group have consistently found the training inadequate.

Written tests are too easy, the investigators reported, yet a fifth of the trainees failed anyway, and investigators in reactor control rooms found that operators ignored warning lights and gauges. Such recklessness in operating old and temperamental machines was the primary reason that Savannah River's reactors were turned off by the Energy Department in August 1988.

Mr. Moore and Mr. Richardson say the problems with training are not as severe as the safety advisory board says they are. But John T. Conway, the chairman of the safety group, said in an interview that operators are not yet qualified to restart the reactor.

And the symptoms of trouble at the Energy Department are seen in Aiken not as a problem, but as the fuel for a grand economic boom. Unemployment in Aiken County hovers between 5 and 6 percent, among the lowest in South Carolina. "It's been a great year," said Vikki Crossland, a real estate saleswoman in Aiken. "Last month, we sold 42 homes. Half of them were to Savannah River employees."

DOE response to the New York Times article by Keith Schneider, attached.

The Secretary of Energy
Washington, DC 20585

April 19, 1991

Mr. Leslie Gelb
Deputy Editorial Page Editor
New York Times
229 West 43rd Street
New York, New York 10036

Dear Mr. Gelb:

Your recent article about the Department of Energy's Savannah River Site was both disappointing and misleading. The article, "Nuclear Complex Becomes a Huge Magnet for Money," by Keith Schneider, was based in large part on the information he gathered during a recent 2-day visit to the site where he was given broad access to various facilities and provided ample time to interview senior managers from DOE and Westinghouse, the operating contractor at the Savannah River Site. In light of this, I expected balance and fairness rather than this inaccurate portrayal of the Savannah River Site operation.

The article fails to acknowledge four very important aspects of the Savannah River story -- all of which should have been very evident to Mr. Schneider. First, it is impossible to precisely predict future national needs for nuclear materials. Who would have forecast in 1989 that communism would decline in Eastern Europe and the Berlin Wall would come down? Decisions made in 1988 and 1989 to renovate all three production reactors at Savannah River were based on the needs as then defined by the President to support the nuclear deterrent.

Second, the safety and environmental improvements at the Savannah River Site and at other Department of Energy weapons facilities are expensive, but this is the price we must pay in order to bring about adequate health and safety levels for facilities that were built nearly 40 years ago. Admittedly, these facilities were not adequately managed by my department for at least the last ten of those 40 years. In part, it was the safety shutdown in 1988 of the Savannah River reactors that led the President to ask me to become Secretary of Energy and help him "clean up the mess." I have done just that, aggressively and with considerable personal involvement. We have dedicated one billion dollars to urgently needed corrective measures regarding reactor safety beyond those planned by my predecessor.

So to ignore, as the article did, the substantial safety improvements made at Savannah River since 1989 is inaccurate. Due to safety improvements, the facilities being operated at Savannah River today are greatly improved and pose a significantly lower risk to the health and safety of site workers, the public and the environment. This will also be true of the production reactor that is expected to restart this summer, after I and external independent oversight boards are convinced that it is safe to do so.

Third, there is no question that improved cost controls and procurement practices are also needed. In fact, we have identified these issues and are taking steps to effect improvements where necessary, not only at Savannah River but at all of our facilities.

Fourth, with regard to operator training, a comprehensive training program, with strong foundations in both the Naval and commercial nuclear power programs, was phased in at Savannah River beginning in 1988. Performance requirements for operators have become more stringent as their level of knowledge has increased. The process is not yet complete, but there is strong measurable progress and we are optimistic that now-well-documented start up qualification prerequisites will be met. The reactor will come on line with well-trained and prepared operators or it will not come on line.

My established policy of openness is the right policy. The past policy of unwarranted concealment under the thin, and in many cases unjustified, veil of secrecy did not serve the national interest. On the other hand, it has proven to be a double-edged sword. For example, I am constantly re-fed with my own list of deficiencies, ones which I uncovered and I exposed to public view, but which are so often touted as new information by reporters.

The Savannah River facility plays a critical role in maintaining the nuclear deterrent capability of the Nation. The Department of Energy has been actively involved in monitoring the future needs of the nuclear weapons arsenal set by the President, and has taken actions at Savannah River and other Department of Energy facilities in response to decreasing weapons requirements in order to save taxpayer dollars. We continue to believe that the program to which we are committed, with all its associated uncertainties, is the only sensible one if we are to meet these requirements.

We will continue to pursue vigilantly the course of action that allows us to support our national security objectives in a wise and both fiscally and environmentally responsible manner.

Sincerely,

James D. Watkins
Admiral, U.S. Navy (Retired)

Senator EXON. Mr. Secretary, I am, frankly, amazed at your patience with the criticism that has been launched from time to time. I agree with you that your openness has been refreshing, to this Senator, at least. It just goes to show that when people demand openness and get it, they don't say thank you very much. They simply say what have you done for me lately. So it seems to me that you have the support of this committee. We are not always going to agree with everything that you do. But I think there is no one on this committee that questions the integrity of the Department under your direction.

We appreciate very much your testimony this morning and that of you, Mr. Duffy, and that of you, Mr. Claytor. We invite and encourage the continued open discussion and freedom of discussion on all of these complicated issues that I am pleased you have to deal with on a daily basis rather than me. Thank you for being here. Are there any other further comments that you would like to make, Mr. Secretary?

Secretary WATKINS. No. Thank you, Mr. Chairman.

Senator EXON. If not, thank you for being here this morning and we are adjourned.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR J. JAMES EXON

TRITIUM REQUIREMENT

Senator EXON. What percentage of the tritium requirement can be maintained, with 90 percent confidence, when relying on K and L reactors, until a new production reactor is on line?

Secretary WATKINS. Based on our current plans for reactor restart and operation, we are confident that we will be able to provide 100 percent of tritium requirements, which includes the reserve, until the new production reactor's scheduled start-up. However, there are no viable near-term alternatives for the production of tritium other than the SRS reactors. These reactors are nearly 40 years old. We are instituting enhanced inspection and testing that should alert us to changes in the reactor situation so that preventative maintenance and/or replacement of equipment can be performed in a timely manner. With the improved maintenance practices we are initiating, we are optimistic that these reactors will be able to operate at least until new capacity is available. However, based on plans underway in the commercial industry for its aging reactors, it is important that this new capacity be developed on an urgent schedule.

NEED FOR NUCLEAR WEAPONS LABORATORIES

Senator EXON. Given a reduced need for nuclear weapons, is there sufficient work for the Department of Energy to maintain three nuclear weapons laboratories?

Secretary WATKINS. Yes. This is due to the fact that laboratory programs are more directly driven by the variety and complexity of systems in stockpile and new technology requirements (e.g., safety), than the actual number of warheads in the stockpile. As long as the United States retains a nuclear weapons capability, there will be a need for both the warhead design and integration function. The design function supports a broad spectrum of stockpile related activities, which include: maintenance, build down, modernization, increased surety, and threat assessment. And, while the priorities do change among these activities, they all require significant levels of activity. At present we see that reduced numbers of current nuclear weapons and emerging nuclear and non-nuclear technologies will place an even greater premium on the safety, reliability, and survivability of our nuclear forces. Thus, though there may be a reduced need in the number of nuclear weapons needed, we anticipate there will not be a reduced need for these weapons, nor will there be a significantly reduced need for the Laboratory support of our stockpile. Further, it is vital to recognize that by the end of fiscal year 1991, the direct nuclear weapon related work force at the three laboratories and NTS will be down 30 percent from fiscal year 1987 levels. That places us below the "bare bones" level for meeting our known requirements.

Today there is one nuclear weapons program, two nuclear design laboratories, and three nuclear weapons laboratories. The rationale for having two design laboratories is as strong today as it has ever been. Beyond the sheer volume of work that must be done, there still exists the need to have a competitive approach to assuring that this Nation retains a reliable, survivable, and safe nuclear stockpile. This was most recently indicated in the Drell report to Congress in which it was recommended that the Department of Energy and the Department of Defense "should launch a competitive priority effort at the weapons laboratories for new warhead designs that are as safe as physically possible. . . ." Thus, there is a need to maintain three nuclear weapons laboratories as long as we seek to maintain a nuclear weapons stockpile of increasing quality.

Senator EXON. Is there additional work for these laboratories to perform if there is a decrease in the need for weapons design and testing?

Secretary WATKINS. Yes, and it is an increasing workload. The weapons laboratories have built a robust science and technology capability that is unique within the country. This is based on over 40 years of work in building the strategic deterrent vital to our Nation's survival. The workload for nuclear weapons continues with maintenance of the stockpile and assuring reliability, survivability, and safety of our weapons. In addition, as our stockpile decreases in size, more attention will be needed to assure continued functionality of this smaller stockpile. Our weapons laboratories will become increasingly involved in non-defense areas as well. Scientific expertise can be marshalled to attack the problems of economic competitiveness, energy self-sufficiency, global warming, waste clean-up, development of industrial practices compatible with increased environmental, health, and safety requirements, improved education, and enhanced activities in space.

There is an ongoing study by the Secretary of Energy Advisory Board on the future of the Department of Energy multi-program laboratories. Results of this study, which are not yet available, will address some of these issues for the weapons laboratories.

Senator EXON. Are there other areas where the laboratories can contribute and what can we do to ensure their scientific expertise?

Secretary WATKINS. The scientific expertise of the laboratories is based on their work in support of the nuclear strategic deterrent over the past 40 years. This vital function must be maintained because the strategic deterrent is essential to the continued defense of this country, in spite of recent lessening of world tensions. The laboratories are asked to contribute to other areas because of the technology base built by defense. But weapons expertise is unique and will wither if current funding levels are not maintained. Already, there has been a 30 percent drop in weapons program staffing over the past 4 years because of budget. While other areas, such as work on economic competitiveness and energy self-sufficiency, can perform an important role in maintaining scientific expertise at the weapons laboratories, they will not allow maintenance of the basic nuclear competency, which must continue to be maintained by a core group coupled to a vigorous experimental program.

ATTRACTING AND RETAINING QUALIFIED PERSONNEL

Senator EXON. Does the Department of Energy have any current problems attracting and retaining qualified personnel in the environmental restoration and waste management program or in defense programs?

Secretary WATKINS. Through internal assessments, the Department of Energy has found that it does not have an adequately trained staff to carry out the waste cleanup program. In fact, the Department of Energy has found that lack of training is a common problem. The cleanup of Federal facilities is a major undertaking. The number of qualified personnel necessary for an effective program is enormous. The resolution of this problem through the initiation of extensive training and retraining programs is being attempted. Established within the Department is the Office of Scientific and Engineering Recruitment, Training, and Development, which has formulated a Department of Energy training policy and is developing a Five-Year Training Plan. The plan includes internships for entry-level engineers and scientists, advanced technical training and adjunct university programs for mid-level managers, and the establishment of a National Energy Academy. In addition, Hanford and the Feed Materials Production Center have programs in place to train and retain personnel in the areas of environmental restoration and waste management to reflect their changing mission.

In Defense Programs, we find that for low- to mid-level positions, the length of time involved in obtaining a security clearance, typically 9 months to a year, causes many applicants to lose interest in the job. Oftentimes, the hiring office may wait 6 months for a security clearance to be granted only to find that the candidate has accepted a position elsewhere.

In both program areas, the Department of Energy is competing with the private sector. Historically, the issue of pay has favored the private sector, but it is hoped that enactment last year of legislation containing much desired critical pay and dual compensation provisions will permit the Department to compete more effectively for these highly qualified individuals, especially for upper-level management positions. We are very appreciative of the leadership of this committee in these important pay initiatives.

EXPANSION OF DEFENSE NUCLEAR FACILITIES SAFETY BOARD JURISDICTION

Senator EXON. Would the Department of Energy support an expansion of the Defense Nuclear Facilities Safety Board (DNFSB) jurisdiction to specifically include the Nevada Test Site, Pantex, and environmental restoration and waste management activities not already being addressed by the DNFSB?

Secretary WATKINS. The Department believes that the Defense Nuclear Facilities Safety Board has made many valuable recommendations to the Department since it began operations. Both the Secretary and the Assistant Secretary for Defense Programs have stated, however, that the Board has enough to do now without extending its responsibilities any further. After reconsideration, the Department could support the expansion of the Board's jurisdiction in the manner set forth in the Bustamante amendment to H.R. 2100, as approved by the House. Specifically, expanding the Board's authority to include the assembly operation at the Pantex facility would be a welcome addition to the external oversight that already exists for these operations. The Department does not support other expansions of the Board's authority at this time.

AIRSPACE ABOVE DEPARTMENT OF ENERGY FACILITIES

Senator EXON. Last year the Department of Energy and the Federal Aviation Administration undertook a review of the airspace above Department of Energy facilities, including the Savannah River Plant. At one time you anticipated a final rule in February 1991. What is the current status of that effort?

Secretary WATKINS. On February 13, 1990, the Federal Aviation Administration informed the public by Federal Register notice that it wished to receive public comments on the Department of Energy's request to establish or increase existing prohibited airspace at nine Department of Energy sites. The notice provided for a written comment period which ended in April 1990. In addition, a public hearing was held at each potentially affected site.

On January 16, 1991, the Department of Energy provided the Federal Aviation Administration with an analysis of public comments resulting from both the hearings and the public comment period. In addition, on February 1, 1991, the Department of Energy requested that the Federal Aviation Administration provide "temporary" flight restrictions at nine critical facilities, including the Savannah River Site, due to potential terrorist activities associated with hostilities in the Persian Gulf. This request for temporary restrictions was made to enhance security conditions at these Department of Energy sites for the duration of the hostilities recognizing that the rulemaking process for permanent mandatory restrictions currently underway would not be completed for some time.

On March 8, 1991, the Federal Aviation Administration replied to the Department of Energy's requests of November 1989 and February 1991 for overflight restrictions. The Federal Aviation Administration response stated that the Department of Energy "request for rulemaking to establish permanent restrictions over the Department of Energy nuclear weapons facilities remains under consideration." The response further advised that the Federal Aviation Administration staff would work with the Department of Energy security personnel to develop temporary flight restrictions when credible threats exist.

The Department of Energy intends to continue discussions with the Federal Aviation Administration on these issues and we will keep the committee closely informed of any new developments.

SAVANNAH RIVER REACTORS

Senator **Exon**. Recently, there have been reports with respect to the safety of the Savannah River reactors. Press reports indicate that necessary safety upgrades will not be completed before restart; you have consistently assured us that all necessary upgrades will be completed; the General Accounting Office indicates that the current tritium supply allows sufficient time to resolve all the issues. Could you please clarify this apparent conflict?

Secretary **Watkins**. My position on restart has not changed. I will not authorize the restart of any reactor until I am personally assured that it can be operated safely. I will not hesitate to delay K-Reactor restart if a delay is necessary to ensure safe operations.

In preparation for the restart of this reactor, the Department of Energy has prepared a Safety Evaluation Report (SER), similar to evaluations conducted prior to the start-up of troubled commercial nuclear facilities. This SER outlines the work that must be performed prior to restart. The K-Reactor is currently being tested to ensure that reactor safety systems are functional. After completion of this testing, an Operational Readiness Review (ORR), led by senior Department of Energy personnel, will be conducted and monitored by independent internal Department of Energy oversight groups. The Defense Nuclear Facilities Safety Board has been reviewing various restart activities and will review the results of the ORR prior to any recommendation to restart the reactor. The results of all these efforts will provide sufficient information for me to make a restart decision.

K-Reactor is expected to be started in the summer of 1991. Recent statements made by the General Accounting Office regarding tritium requirements do not consider the requirement directed by the President to establish a tritium reserve to meet the needs of the nuclear weapons stockpile during unforeseen periods of reduced or suspended tritium production. By restarting the first reactor in the summer of 1991, the tritium inventory will satisfy this Presidential directive.

Senator **Exon**. When will the tritium needs of the United States reach critical proportions if the Savannah River reactors fail to resume production in 1991?

Secretary **Watkins**. Without new production it is estimated the nuclear weapons stockpile will be adversely impacted [deleted]. However, [deleted] to begin to build a reserve supply of tritium to enable the Department to meet the needs of the nuclear weapons stockpile during unforeseen periods of reduced or suspended tritium production. Restarting one Savannah River reactor in 1991 will satisfy [deleted] assuming it can be operated at a sufficient power level.

Senator **Exon**. Is there an alternative source of tritium?

Secretary **Watkins**. There are no viable near-term alternatives for the production of tritium other than the SRS reactors. No life-limiting conditions at these reactors have been identified, however, they are nearly 40 years old. We are instituting enhanced inspection and testing that should alert us to changes in the reactor situation so that preventative maintenance and/or replacement of equipment can be performed in a timely manner. With the improved maintenance practices we are initiating, we are optimistic that these reactors will be able to operate at least until new capacity is available.

The Office of New Production Reactors is developing light water reactor tritium targets as a contingency to guarantee the existence of assured production capacity should anything happen to the present production capacity. However, it is believed it would take about 6 years to bring the option on line.

Question Submitted by Senator Carl Levin

NEW PRODUCTION REACTORS

Senator **Levin**. During your testimony, you stated that the Department of Energy had to cut $52 million from the New Production Reactors budget and that this action would delay the program by 9 months and raise the cost of the program. What is the current cost estimate (total program cost in then year dollars) for the NPR program as newly configured (choosing only one reactor)?

Secretary **Watkins**. The NPR has developed a Total Estimated Cost (TEC) based upon conceptual designs which cover capital and construction costs only. The TEC for the Heavy Water Reactor (HWR), on a 10-year construction schedule, is $5.490 billion in year-of-expenditure dollars and the TEC for the Modular High Temperature Gas-Cooled Reactor (MHTGR) plant, on a 12-year construction schedule, is $5.466 billion. The MHTGR is a four module plant which equates to one-half the output capacity of the proposed HWR. As part of the preparations for the Record of

Decision, the NPR Program is currently developing the TEC for an eight module gas reactor plant which could produce a comparable amount of tritium to the HWR. The Total Project Cost (TPC) estimate includes the TEC plus operating costs associated with the Project such as EIS preparation, training of operators, and other safety activities. These costs are being identified and, along with other life cycle costs, will be available prior to the Record of Decision.

Questions Submitted by Senator Strom Thurmond

NEW PRODUCTION REACTORS

Senator **Thurmond**. Last year it was estimated that $652 million would be required in the fiscal year 1992 budget request to keep the NPR program on track. The budget submission contains only $500 million. Is this funding level sufficient to ensure that we have a NPR production capability by the year 2000?

Secretary **Watkins**. The $652 million represented last year's budget request for the continued duality strategy in fiscal year 1992. The revised budget request for fiscal year 1992 is for $500 million and this reflects the strategy of selecting only one reactor technology at the Record of Decision, and continuing with the light water reactor tritium target as a contingency. However, the fiscal year 1992 request of $500 million could result in a delay of the schedule for up to 9 months.

Senator **Thurmond**. What additional funding will the NPR program need next year as a result of this year's shortfall?

Secretary **Watkins**. The NPR program is a design and construction program which requires a specific funding profile to successfully complete its mission. A projected shortfall in fiscal year 1992 funding cannot be made up by additional funding in fiscal year 1993. Projections of the effect of a funding shortfall show that the schedule may slip up to 9 months. Additionally, it is estimated that up to $1 million per day could be required in the out-years to pay for the fixed costs of those delays.

ENVIRONMENTAL RESTORATION

Senator **Thurmond**. Do you now have in place the infrastructure to effectively manage the significant increase in funding that has been provided to the Department for the environmental restoration and waste management program?

Secretary **Watkins**. One of the overriding considerations during the fiscal year 1992 budget deliberations was whether or not the Office of Environmental Restoration and Waste Management (EM) could effectively manage the level of funding requested. It was determined that the existing infrastructure does support the pending fiscal year 1992 budget request.

However, EM must continue to develop the infrastructure to accomplish the enormous clean-up task ahead. We will begin by building a scientific basis for the future program. This involves developing resources through education and technology.

Developing new technologies is a special problem. What Congress and the American public are coming to understand is that there are some parts of our clean-up operation that will be impossible to solve without new technology. Environmental Protection Agency Administrator William Reilly gave his assessment of the Superfund program last year, and the points he raised about the Environmental Protection Agency's progress over a 10-year period apply to us, too. Over the decade, the Environmental Protection Agency was able to complete clean-up at only a handful of the 1,200 Superfund sites. He said the real dilemma was how to reduce risk to the environment from a growing list of sites, each of which present great complexity in a situation that is best characterized by incomplete knowledge, immature technology, and relentless pressure on limited resources. We in the Department of Energy also need to systematically develop the technology, data, industrial infrastructure, laboratory capability, and qualified personnel to do the job the way it must be done. This will take time. We're in the very early stages of a clean-up program that will span decades. In the meantime, we believe that we have the infrastructure in place to effectively manage the increased funding in the fiscal year 1992 budget request aimed at solving these problems.

REACTOR RESTART

Senator **Thurmond**. In its annual report to Congress dated February 1991, the Defense Nuclear Facilities Safety Board listed several areas of concern regarding the restart of the reactors at the Savannah River site. The key areas are: the emergency cooling system; vessel and piping integrity of the K, L, and P reactors; seismic activity; and personnel training. Since both you and I are vitally interested in the safe restart of the reactors, could you provide me a status report on each of these areas?

Secretary WATKINS. The Department is working to address the Defense Nuclear Facilities Safety Board's concerns in these areas.

The Board's concern regarding the emergency cooling system involves the ability of the system to protect the reactor core in the event of a loss of coolant accident. Westinghouse Savannah River Company is expected to complete a transient and accident analysis in May. The results of this analysis will provide a basis for determining an acceptable operating power level.

The Board's concerns regarding reactor vessel and piping integrity echo a concern the Department voiced in the early stages of the reactor restart effort. Our ultrasonic testing program of the reactor vessels, to determine if there were flaws or cracks that could lead to leakage of reactor coolant, was completed early this year. The results of this testing were outlined in an April 19, 1991, letter to the Board. Subsequently, the Board held public hearing on this issue on April 24, 1991. All witnesses supported the conclusion that the K-Reactor tank is safe for continued operation and that the intergranular stress corrosion cracking phenomenon does not pose a threat to the structural integrity of the vessel. We believe that there are no further issues regarding ultrasonic testing that need to be resolved before reactor restart.

Ultrasonic testing of the process water system piping has also been completed, with the exception of one section of piping which has been replaced. Also, inspections have been performed on other safety systems (e.g., moderator recovery system and the supplementary safety systems). The results of these inspections have been reviewed and found acceptable. These results will be discussed with the Board.

As stated by the Board in their annual report, the Department of Energy and its contractor have focused considerable attention on the ability of the reactors to withstand seismic events. During recent meetings with the Board, it became clear that uncertainties related to the characterization of the "soft zone" earth layer below K-Reactor are sufficient to require the consideration of seismically induced subsidence.

The Board's concerns with operator training are addressed in the Department of Energy's supplemental response and implementation plan which was forwarded to the Board on February 7, 1991. This plan replaces our previous response to the Board's training recommendation and addresses additional Board questions. The Board is currently reviewing this new plan. Our final recommendations pertaining to operator training for the five K-Reactor operating crews will be completed in July of 1991.

We remain confident that we will satisfactorily resolve any issues that would prevent restart in time to support our planned summer start-up of the K-Reactor.

W-88 SAFETY

Senator THURMOND. As I understand it, the safety concerns—not safety problems—with the W-88 are due to the fact that it does not have insensitive high explosive, and that the missile propellant could explode. Someone in the Navy insisted on this for performance sake. Who was the CNO who approved this requirement?

Secretary WATKINS. The Trident II missile system incorporating W-88/Mk-5 reentry bodies meets all established nuclear safety requirements.

The Drell committee raised an issue concerning the possibility of plutonium dispersal for which an objective standard has yet to be defined. Specifically, the committee felt that insufficient data existed regarding the likelihood of full scale rocket motors detonating under hypothetical accidents. Analysis of certain accident scenarios regarding the handling of mated missiles (missiles with warheads installed) requires evaluation of the risk of motor detonation. The design of the Trident II missile places W-88/Mk-5 reentry bodies containing high explosive (HE) in close proximity to the Trident II third stage motor. As a result, the committee concluded that uncertainties caused by lack of data and the inability to perform definitive calculations introduce uncertainty regarding an accident scenario where detonation of the Trident II third stage could lead to the risk of plutonium dispersal.

The immediate safety concern of the Drell committee has been removed. On an interim basis the Navy has implemented existing alternative handling procedures whereby reentry bodies are mated with Trident II missiles only when the missiles are in the submarine launch tubes. These procedures prevent the handling of mated missiles and prevent the conditions which would lead to the accident scenario of concern to the committee.

The use of HE rather than insensitive high explosive (IHE) in the W-88/Mk-5 reentry body was recommended by the undersea warfare office of the Chief of Naval Operations (OP-02) to meet specific military characteristics and operating environment specifications. I was the Chief of Naval Operations (CNO) at the time. This recommendation was endorsed by the Under Secretary of Defense for Research and Engineering (USDR&E), Dr. R.D. De Lauer, and approved by the Military Liaison Committee (MLC) (currently the Nuclear Weapons Council) (NWC) Chairman Dr. R. Wagner after consideration of various other issues. These included the yield of the reentry body, the range and payload of the Trident II missile, and consideration of the state of understanding of the characteristics of the relatively new insensitive high explosive (IHE). The Department of Energy concurred with these requirements. The inherent safety of the design has been reaffirmed many times by independent safety reviews.

Senator THURMOND. Is the W-88 Trident warhead unsafe? Or is the issue that there exists means to make it even safer?

Secretary WATKINS. The W-88 Trident warhead is safe as a result of warhead design features and procedures for its handling, transportation, etc. The risk of an accident which results in adverse weapon response is very low. Additional design features may reduce this very low risk even further. The issue is whether the costs for developing, testing, and new production justify the incremental benefit such features may provide. The Department of Defense would need to speak to the national security impact of a change in the current W-88 program.

OCCUPATIONAL SAFETY

Senator THURMOND. You recently had OSHA review some Department of Energy industrial practices. I understand they were quite critical; and I also understand that the Department of Energy is not directly subject to OSHA authority, but has its own job safety programs. Can you tell us how successful you have been?

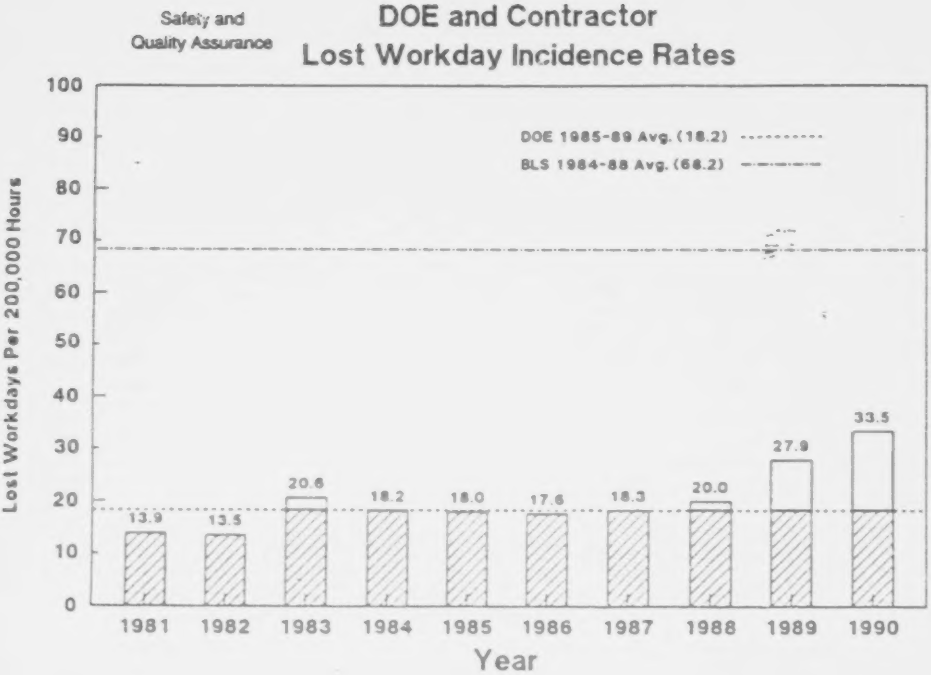
Secretary WATKINS. When I accepted the responsibility for managing the U.S. Department of Energy, I announced a 10-point plan to chart a new course for the Department of Energy toward full accountability for environment, safety, and health. To fulfill that commitment, I invited the Occupational Safety and Health Administration (OSHA) to initially participate in the Tiger Team process and later to conduct an evaluation of the Department of Energy's worker safety and health program for its government-owned and contractor-operated facilities.

OSHA conducted the program evaluation by combining the results of three Tiger Team inspections with the results of visits to eight additional sites. OSHA completed its evaluation and delivered the final report to me on January 9, 1991. The report contained a number of recommendations for strengthening the Department of Energy's oversight and line management's accountability and capability for compliance with the Department of Energy's Occupational Safety and Health (OSH) requirements.

In March 1991, I directed the implementation of the OSHA recommendations and the strengthening of the Department of Energy management structure for compliance with OSH requirements. The process to do this has begun and will continue for the next year. We can say that success is being obtained due to the positive response and active participation of the Department of Energy line programs in this process. I expect to be fully successful in establishing an effective program for compliance with OSH requirements.

Senator THURMOND. What are the Department of Energy's statistics on work days lost to accidents?

Secretary WATKINS. The Department of Energy lost workdays incidence rate remains lower than comparative nationwide industrial averages as drawn from data reported by the U.S. Department of Labor. As shown in Figure 1, for the time period including the most recent 5 years of data available, occupational injury and illness lost workday incidence rates ranged from 17.6 per 200,000 hours in 1987 to 33.5 per 200,000 hours in 1990. National industrial averages as reported by the Department of Labor ranged from 64.9 per 200,000 hours in 1985 to 78.7 per 200,000 hours in 1989.



The Department of Energy recordkeeping system is currently based on Department of Labor guidelines. However, from January 1, 1986, through December 31, 1989, Department of Energy occupational injury and illness information was recorded using Department of Energy developed criteria. Therefore, a portion of the increase in the Department of Energy lost workdays rate between 1989 and 1990 is attributable to changes in recordkeeping practices. Also, the Department of Energy is in the process of upgrading and strengthening its safety and health program, and the Ten-Point Initiative is causing more attention to reporting. The Department of Energy is also increasing its oversight of safety and health including injury and illness recordkeeping.

HISTORY OF ROCKY FLATS

Senator THURMOND. I am one of the few people who remembers well the history of Rocky Flats. Am I correct that the people and political leaders of Denver applied a great deal of pressure to locate the plant in Golden to provide local jobs, while the Department of Energy professional staff and the contractor, whom everyone enjoys criticizing these days, urged that the plant be located in a more remote area?

Secretary WATKINS. I am unaware of any pressure applied by the citizens of Denver, Colorado, years ago to locate the Rocky Flats Plant in Golden. I am aware of the explanation of the factors that were considered in the site selection process contained in a September 1987 report entitled, "History of the Production Complex: The Methods of Site Selection." I have attached excerpts from this report for your consideration.

HISTORY OF THE PRODUCTION COMPLEX: THE METHODS OF SITE SELECTION

September 1987

Prepared by: History Associates Incorporated, Rockville, Maryland

Prepared for: U.S. Department of Energy, Assistant Secretary for Defense Programs, Office of Nuclear Materials, Washington, D.C.

3. *Rocky Flats Fabrication Facility (1951)*

The siting of Project APPLE, the "alternate fabrication facility" for Los Alamos, was done by the Santa Fe operations office and its chosen contractor for the facility, Dow Chemical, in early 1951. Dow was instructed to choose a general area that would be accessible to Los Alamos, inside the "strategic invulnerability" zone designated by the Defense Department, and isolated enough not to require displacing many people but with a supporting population in the vicinity. These considerations were common to many of the AEC's siting decisions at that time. For this facility, however, there was also a unique requirement: a dry, moderate climate. The AEC needed to save several million dollars in constructing and operating it ($9 million less than the AEC had requested for it had finally been budgeted), and the largest cost-cutting measure would be to substitute a natural evaporative cooling system instead of refrigeration.

The Santa Fe office also decided that "attractive environs" were desirable: skilled personnel would have to be compensated for the extremely hazardous work by offering them beautiful scenery and extraordinarily good outdoor recreation possibilities.

Of 21 areas that were suggested, Dow and the Santa Fe office agreed that only the Denver area satisfied all these criteria. It was the only one that had a climate dry enough to make evaporative air conditioning feasible, and its mountain setting was both beautiful and promising for outdoor recreation. Denver was a tourist center with many transient housing facilities that could absorb the construction crews as well as the operating personnel. This was a strong point in its favor following the congressional hearings in February 1951 about the grave housing problems at Paducah and Savannah River.

The Denver area had another plus in the eyes of the planners in Santa Fe: many of the machinists, subprofessionals, and clerical personnel at the Los Alamos laboratory came from Denver, and it would probably not be difficult to attract them to work at the new facility.

The Santa Fe operations office inspected eight other areas, which confirmed their original judgment that the Denver area convincingly outshone the competition.

Once Denver had been chosen as a general area, the Santa Fe operations office and Dow representatives visited seven specific locations near the city. To choose among these potential sites, they applied a secondary set of criteria. For the sake of safety they wanted isolation, away from the city itself, its airport, and residential areas. Two sites satisfied this requirement: Rocky Flats and a site to the north of the Rocky Mountain Arsenal. But at the latter site the power transmission lines would have to be shared with the Arsenal, and in the event of a national emergency, the AEC facility might have to limit operations because of the limited capacity of these transmission lines to provide current to both facilities. The transmission lines which passed near the Rocky Flats site would serve no other major plant. Finally, the survey team observed that the soil around the Arsenal was loess, which would become blown dust in a windstorm, creating an extra burden on air-filtration systems. The Dow representatives concurred with the Santa Fe operations office: Rocky Flats was the preferred site.

QUESTIONS SUBMITTED BY SENATOR EDWARD M. KENNEDY

X-RAY LASER PROGRAM

Senator **KENNEDY**. Your budget request for fiscal year 1992 shows that you are planning to continue development and testing of a nuclear bomb driven X-ray laser. In the past, the primary Department of Energy justification for this program has been that it is required as a "threat assessment" of what the Soviets might be able to achieve in this field, in order that the United States might avoid "technological surprise." However, in the last 18 months, [deleted] the Soviet government has said over and over again that it would agree to a comprehensive test ban with extensive and intrusive verification measures. In light of these changed circumstances, and with all the environmental, health, and safety priorities that the Department of Energy must pursue, why are you continuing to develop and test the X-ray laser weapon concept?

Secretary **WATKINS**. The Department of Energy is continuing to pursue the research on the nuclear driven x-ray laser weapon to understand the threat posed by this advanced concept. The Soviets have conducted research on x-ray laser concepts in the past, [deleted]. The United States has significantly slowed the threat assessment research on the x-ray laser due to funding constraints, but that does not dictate that we should ignore the threat potential of these concepts, nor should it dictate that the United States should ignore threat assessment.

Senator **KENNEDY**. How much is that going to cost in fiscal year 1992?

Secretary **WATKINS**. Approximately [deleted] is presently planned for the x-ray laser research program for fiscal year 1992.

Senator **Kennedy**. When, if ever, does the Department of Energy plan to cease funding nuclear directed energy weapons research and testing?

Secretary **Watkins**. The Department will continue to conduct threat assessment research and necessary testing on advanced nuclear directed energy weapons concepts until the administration is able to verify that these concepts do not pose a potential threat to the U.S. strategic deterrent forces or a future strategic defense architecture. At the present time, there are no plans to completely eliminate this research, but annual review of the program will be conducted to appropriately adjust the scope of the Department of Energy's threat assessment effort.

ROCKY FLATS PLANT RESTART

Senator **Kennedy**. You say in your prepared statement that one of your "priority goals" during 1991 is to achieve "safe resumption of plutonium processing operations at the Rocky Flats plant in Colorado after more than a 1-year shutdown for significant operational weaknesses." Why is it important to resume plutonium processing operations at Rocky Flats this year?

Secretary **Watkins**. The Rocky Flats Plant is the only facility in the Nation capable of manufacturing plutonium "pits" in the required numbers for use in the nuclear weapons that make up our strategic deterrent. As long as plutonium operations at Rocky Flats remain curtailed, the Department of Energy cannot meet Presidential requirements for delivery of nuclear weapons to the Department of Defense.

Senator **Kennedy**. Other than the W-88, which warheads requiring new plutonium pits are scheduled for delivery to the stockpile in fiscal year 1992?

Secretary **Watkins**. None.

Senator **Kennedy**. How about fiscal year 1993?

Secretary **Watkins**. The [deleted] requiring new plutonium pits scheduled for delivery to the stockpile in fiscal year 1993.

Senator **Kennedy**. Other than the W-88, which new warheads are scheduled for delivery to the stockpile in fiscal year 1993?

Secretary **Watkins**. The B61-7, B61-9, and W88 are scheduled for delivery to the stockpile in fiscal year 1993.

Senator **Kennedy**. If there is no requirement for warheads other than the W-88 over the next few years, and there are safety concerns about the current version of the W-88, then why is Rocky Flats restart such a "priority goal" for you this year?

Secretary **Watkins**. There are warhead build requirements other than the W-88 in fiscal year 1993 and beyond which are reflected in the Presidential Nuclear Weapons Stockpile Plan. Plutonium operations at Rocky Flats are essential to meeting those requirements including the modernization of the weapons maintained in the stockpile. Consistent with safety being the top priority, plutonium operations at Rocky Flats will be resumed as soon as the necessary facility safety improvements are made.

RECYCLING PLUTONIUM PITS

Senator **Kennedy**. I would like to draw your attention to an interesting article in the Washington Post on Sunday, April 14, 1991, titled "Economy Model Deterrence," written by three analysts from Friends of the Earth. These independent observers have suggested that we could accommodate an immediate phase-out of plutonium processing and foundry operations at Rocky Flats by recycling plutonium pits from weapons being retired from the stockpile; [deleted] pits from the Poseidon warhead now being retired. What, if anything, prevents us from using those pits in newer warheads, like the Trident II warhead and the SRAM-II warhead, thereby moving to an immediate phase-out of production operations at Rocky Flats?

Secretary **Watkins**. While there is merit to this idea, pit reuse remains an unproven technology. The Department of Energy is actively pursuing reuse of warhead pits [deleted].

Other substitution options also appear to have potential value. However, reuse of pits [deleted]. Additional factors which can adversely affect pit reuse are age of the pit (leads to increased radiation exposure), [deleted] and compatibility of the pit with modern safety and improved security features of newer warheads. Therefore, resumption of plutonium activity at Rocky Flats remains the quickest and most reliable way to modernize the stockpile. There is no alternative to resumption of pit production if we are to meet requirements of the Department of Defense and the President for delivery of modern and safer weapons.

TRANSFER OF HEALTH RESEARCH

Senator **Kennedy**. I am concerned about your recent Memorandum of Understanding with the Secretary of the Department of Health and Human Services on radiation health research. You have only transferred some of the long-term studies to the Department of Health and Human Services, and the Department of Energy is resisting the idea of putting all worker and community health records into the proposed comprehensive data resource, and providing unclassified access to all bonafide researchers. It is clear to me that you have more than enough problems to deal with without seeking to hang on to a health research activity which the Department of Energy has mismanaged in the past. Why won't you support Senator Wirth's bill to transfer control over all of this health research to the Department of Health and Human Services?

Secretary **Watkins**. The Secretarial Panel for the Evaluation of Epidemiologic Research Activities (SPEERA), an independent external review committee, conducted a thorough review of the Department of Energy's epidemiology programs and recommended that only the management of the Department's analytic studies be transferred to the Department of Health and Human Services. This recommendation was made solely on the perception that the Department lacked credibility with the public. SPEERA did not conclude that these activities had been mismanaged in the past, nor that they lacked scientific quality or merit.

The Panel also made the recommendation that the descriptive epidemiologic research component, including a health surveillance system, remain within the Department. SPEERA stated that the transfer of all health related research would ". . . overlook the fact that no employer can transfer its responsibility to protect worker and community health."

Regarding your concern about data from Department of Energy worker and community health records, please be advised that the Department is in the process of including data from all Department of Energy worker and community epidemiologic studies into the Comprehensive Epidemiologic Data Resource (CEDR). Access to these data will be made widely available to the research community.

The newly created Office of Health has the expertise and resources to conduct a fully successful health surveillance program. When linked with the Department's occupational and environmental health and safety activities, the epidemiologic activities will give the Department a powerful tool to monitor day-to-day worker health, to evaluate health and safety activities, and to guide policy decisions.

RELEASE OF HEALTH RECORDS

Senator **Kennedy**. In 1989 you released previously secret data showing that during the 1940s and 1950s, thousands of children received significant radiation doses as a result of weapons production operations at the Hanford site. Does this announcement mean that henceforth, all Department of Energy data on environmental releases is now declassified and available to the public?

Secretary **Watkins**. I have made worker and community health one of my top priorities. The release of data to the Hanford Dose Reconstruction Project followed a careful classification review of relevant production data. This information was declassified in order to facilitate this important health initiative. The Department is continuing to conduct classification reviews to determine whether additional production data can be released.

Senator **Kennedy**. Privacy Act considerations aside, are there any national security concerns which in your view would serve to justify continued classification of Department of Energy health records and toxic release exposure data?

Secretary **Watkins**. Employee health records are not classified, nor have they ever been. However, they are protected from disclosure under the Privacy Act. In addition, death certificates and the information obtained from them are the property of individual State health departments. Disclosure of this information may be restricted by contractual agreements.

Environmental data, including records of release of radioactive and hazardous materials, are made available to the public in annual reports prepared by individual Department of Energy facilities.

Senator **Kennedy**. Why don't you make the comprehensive data resource as good as its name by including data on all Department of Energy sites and worker health records in one place?

Secretary **Watkins**. Worker health records are used by the operating contractors at each Department of Energy facility on a routine basis. Access to these records is needed by facility medical staff, industrial hygienists, and health physicists at individual facilities. As these facilities have been run by different operating contractors, the records are not identical at every facility. The data from all these sites can serve no useful purpose unless they can form a coherent unit. The Comprehensive Epidemiologic Data Resource (CEDR) was created to facilitate the acquisition, storage, access, and analysis of data from medical, employment, health physics, and industrial hygiene records collected for epidemiologic studies of Department of Energy workers. Non-Department of Energy researchers will have access to the CEDR database and are free to conduct any analyses they wish.

Senator KENNEDY. Isn't it the case that this data can be compiled in a manner that accommodates Privacy Act concerns, if such concerns are really the issue?

Secretary WATKINS. Data on worker health can be compiled in such a way as to accommodate the Privacy Act. All information that could identify an individual worker (for example, name, date of birth, and address) has been omitted from CEDR. The Department has established agreements with State health departments in order to release information obtained from death certificates on former workers. In addition, users of CEDR are asked to sign a confidentiality pledge that they will not attempt to link CEDR data with any other source that might allow them to identify individuals.

LACK OF STANDARDIZED HEALTH SURVEILLANCE SYSTEM

Senator KENNEDY. The Office of Technology Assessment has advised us that the Department of Energy does not have the technical capacity or the motivation to make decisions about production or clean-up priorities based on worker and community health protection criteria. The Department of Energy has still not developed an integrated, standardized health surveillance system for its workforce, and it still lacks essential data about potential threats to public and employee health that could serve to guide the clean-up effort. Given these current circumstances, and the past record of abuses, why should the Department of Energy continue to be exempt from direct OSHA, EPA, and NRC regulation and enforcement authority?

Secretary WATKINS. The Atomic Energy Act permits the Department of Energy to establish its own worker radiation protection regulations. The Department was the first Federal agency to adopt the 1987 "Federal Guidance for Radiation Protection of Workers," signed by the President. The Department's standards are consistent with, and more conservative than, the new radiation protection standards of the Nuclear Regulatory Commission, and have been since January 1989.

I have stated that the Department of Energy will be in compliance with OSHA regulations. I recognized the safety situation at the Federal facilities and personally initiated a program to address these concerns. I invited OSHA to do a complete survey of the Department of Energy's facilities. This report was recently released and the Department is cooperating with OSHA to address these concerns.

WARHEAD SAFETY

Senator KENNEDY. The Drell Panel on Nuclear Weapons Safety expressed concern about the safety of the W-88/Trident II combination, and a number of other warheads. Do you share those concerns?

Secretary WATKINS. As you know, both the Department of Energy and the Department of Defense treat the Drell Report seriously and are implementing nearly all its recommendations. The efforts are aimed at addressing the concerns raised by the Panel by providing, in many cases, additional technical analysis of the concerns. Based on this technical analysis, the Department of Energy and the Department of Defense can make informed decisions about the benefit of steps to further enhance stockpile safety.

Senator KENNEDY. Do you favor modification of the W-88 to incorporate insensitive high explosive?

Secretary WATKINS. There are higher priority concerns than the W-88. For example, the retirement, replacement, or modification of the older weapons which lack modern safety features has a higher priority. Analysis of an IHE modification to the W-88 is proceeding. If this analysis shows a significant safety gain by putting IHE in the W-88, it will be done.

Senator KENNEDY. Is the safety concern with the W-88 serious enough that this problem alone would warrant postponement of a ban on nuclear tests until it is fixed?

Secretary WATKINS. Safety is one of several reasons why it is vital that nuclear testing be continued. Nuclear tests are conducted to assure that current stockpile weapons are within safety margins and to assure that when safety improvements are considered for our weapons, as with the W-88, they will continue to fulfill their mission and function as designed. Beyond these, nuclear tests are also needed to explore new concepts that could significantly enhance the safety of nuclear weapons in the future.

Senator **Kennedy**. Isn't it the case that modifying the W-88 to incorporate insensitive high explosive and fire resistant pits would require just a few tests over a 3 or 4 year period?

Secretary **Watkins**. What you describe is a very optimistic, success-oriented development scenario. In development programs, it is not uncommon that unexpected design problems are uncovered. Thus, meeting a success-oriented scenario is the exception rather than the rule. One must also consider the constrained capacity and resources available to the Department of Energy complex; higher priority of stockpile safety enhancement work would not be done in order to fund and implement a W-88 modification.

Senator **Kennedy**. If the W-88/Trident II combination is a problem, would not the W-76/Trident I combination be an even bigger problem, given that there are only about 400 W-88/Trident II warheads, but there are some 3,000 W-76/Trident I warheads?

Secretary **Watkins**. The W-88/Trident II and W-76/Trident I designs do have similarities. As new data become available from the W-88/Trident II studies, the applicability of the data to the W-76/Trident I is also assessed. It is not obvious that if a problem were found with the W-88/Trident II, the W-76/Trident I would necessarily pose the same problem to the same extent.

Senator **Kennedy**. If you really have a Trident II problem, don't you have a much larger Trident I problem?

Secretary **Watkins**. The W-88/Trident II and W-76/Trident I designs do have similarities. As new data become available from the W-88/Trident II studies, the applicability of the data to the W-76/Trident I is also assessed. It is not obvious that if a problem were found with the W-88/Trident II, the W-76/Trident I would necessarily pose the same problem to the same extent.

Senator **Kennedy**. Are you planning to remanufacture all these weapons with insensitive high explosive and fire resistant pits?

Secretary **Watkins**. In the context of responsible, contingency planning, the laboratories are studying the feasibility of W-88 modifications to incorporate IHE and FRP. At this time, there are no plans to change the W-88 design in the near future due to higher priority concerns and the very low risk now believed associated with the W-88 and W-76. However, all systems which are not scheduled for retirement in the next few years will be reviewed to evaluate the most effective means of enhancing stockpile safety.

Senator **Kennedy**. You say in your prepared statement that you seek to shift production funding for the B-90 to higher priority needs "such as the W-79 change requirement recently validated by the Secretary of Defense." Given the lack of most modern safety features in the W-79 warhead for the artillery fired atomic projectile—and the difficulty of incorporating these in such a tightly constrained weapon—what is your understanding of the requirement which is driving modification of this warhead for retention in the stockpile while the other artillery fired atomic projectiles (the W-48 and the W-33) are being retired?

Secretary **Watkins**. The W-79 does possess a major modern safety design feature, namely, enhanced nuclear detonation safety. As you know, stockpile requirements are set by the Department of Defense and I have referred your question to the Department of Defense for response.

[Response by the Honorable Robert B. Barker, Assistant to the Secretary of Defense, Atomic Energy, Department of Defense.]

Dr. **Barker**. The W-79 modification planned for fiscal year 1992 is the fulfillment of an almost 3-year-old Department of Energy commitment. It is the Department of Defense's expectation that Department of Energy priorities will include this modification at any level of production funding. Extensive Department of Defense and Department of Energy planning and resource expenditures have already occurred in fiscal year 1990 and fiscal year 1991 in preparation for fiscal year 1992 completion.

The retirement of the W-48 and W-33 Artillery-Fired Atomic Projectiles (AFAPs) was recommended by the exhaustive top-to-bottom review of nuclear weapons requirements, completed by the services, nuclear-capable CINCs, and Joint Staff in August 1990. The Joint Chiefs and the Secretary of Defense approved the retirement recommendation.

[Deleted.]

The W-79 is a modern AFAP offering the Army great deterrent capability because of [deleted].

Senator **Kennedy**. If this weapon is to be retained in the stockpile, why is the mechanical safing reportedly implemented in 1989 insufficient?

Secretary **Watkins**. The safing implemented in 1989 was sufficient. Funds were requested for new mechanical equipment required for warhead maintenance and operations.

Senator **Kennedy**. Please provide unclassified stockpile retirement dates for the following warheads, which lack modern safety features: B-28, W-33, W-48, B-53, W-56, B-57, W-62, W-68, W-69, and W-70.

Secretary **Watkins**. Plans for retirement cannot be provided as these are classified. However, the rate of retirement of older vintage weapons will be significantly accelerated from the situation which existed just 1 year ago.

TECHNICAL ADVISORY COMMITTEE

Senator **Kennedy**. The Defense Authorization Act for Fiscal Year 1991 directed the establishment of, and prescribed guidelines for, a Technical Advisory Committee to advise the President on the verification of fissile material and nuclear warhead controls, not later than December 31, 1990. I understand that the President has delegated the responsibility for forming this committee to the Secretary of Energy. Was this Technical Advisory Committee established not later than December 31, 1990, as required by the legislation, and if not, why not?

Secretary **Watkins**. The Technical Advisory Committee to advise the President on verification of Fissile Material and Nuclear Warhead Controls was not established by the required date of December 31, 1990. It was not established by officials at the Department of Energy by this date because the Department of Energy was not delegated the authority under Public Law 101-510, section 31513(c) by the President until April 10, 1991.

Senator **Kennedy**. If this Technical Advisory Committee was not established by December 31, 1990, when was it established?

Secretary **Watkins**. The Technical Advisory Committee on Verification of Fissile Material and Nuclear Warhead Controls was established in full compliance with the Federal Advisory Committee Act on May 10, 1991.

Senator **Kennedy**. Will the Department of Energy meet the statutory due date for delivery of this report to Congress?

Secretary **Watkins**. On April 10, 1991, the President delegated his responsibility under section 3151(c)(3) of Public Law 101-510 to me. To fully comply with the Federal Advisory Committee Act, the Technical Advisory Committee required under section 3151 was established on May 10, 1991. The report required under section 3151 is scheduled to be delivered to Congress in July 1991.

Senator **Kennedy**. Who are the members of this Technical Advisory Committee, and what are their individual technical qualifications for membership on this committee?

Secretary **Watkins**. The members of the Technical Advisory Committee on Verification of Fissile Material and Nuclear Warhead Controls and their technical qualifications for membership on the committee are:

1. Ambassador C. Paul Robinson, Sandia National Laboratories. Currently Director of Systems Analysis at Sandia, past Chief Negotiator and Head of the U.S. Delegation to the Nuclear Testing Talks. B.S. in Physics from Christian Brothers College and Ph.D. in physics from the Florida State University.
2. Professor Wolfgang K.H. Panofsky, Assistant Director, Stanford Linear Accelerator and Chairman of the National Academy of Science Committee on Arms Control. B.A. from Princeton and Ph.D. in Physics from the California Institute of Technology.
3. Mr. Ronald W. Ewing, Intelligence Community Staff and Chairman of the Director of Central Intelligence's Measurements and Signature Intelligence (MASINT) Committee. B.S. in Electrical Engineering from the Pennsylvania State University and Masters degree in Business Administration from the University of Utah.
4. Mr. Dwight E. Hefflebower, President of Mason and Hanger-Silas Mason Company, operating contractor for the Department's Pantex nuclear weapons fabrication facility. B.S. in Chemistry from Kansas State University.
5. Mr. John L. Meinhardt, Sandia National Laboratories, Assistant to the Vice President for Exploratory Research; former Acting Assistant Secretary for Defense Programs, Department of Energy. B.S. in Geography with a specialty in cartography from the University of Kansas.
6. Mr. Frank P. Baranowski, Consultant and past Director of Division of Nuclear Fuel Cycle and Production, Energy Research and Development Administration. B.S. in Chemical Engineering form New York University and M.S. in Chemical Engineering from the University of Tennessee.

7. Dr. Theodore S. Gold, Senior Vice President of Hicks and Associates. B.S. in Electrical Engineering from Rensselaer Polytechnic Institute, M.S. in Electrical Engineering from the University of New Mexico, and Ph.D. in Engineering from the University of California.

8. Mr. Harry J. Groh, Consultant and past Savannah River Site senior staff. B.S. in Chemistry from St. Louis University and Ph.D. in Physical Chemistry from the University of Rochester.

9. Mr. Paul Vanstrum, Retired Vice President, Union Carbide Nuclear Division. B.S. in Chemical Engineering from the University of Minnesota.

Senator KENNEDY. When did this Technical Advisory Committee conduct its first meeting?

Secretary WATKINS. Because the committee has not yet been formed, there has been no meeting of the committee. Formation of the committee will be announced in the Federal Register as well as the date of their first meeting.

Senator KENNEDY. Please provide the committee with the dates, location, duration, and any minutes or transcripts taken of the meetings of this Technical Advisory Committee.

Secretary WATKINS. Because the committee has not yet been formed, there has been no meeting of the committee.

Senator KENNEDY. How many meetings of the Technical Advisory Committee were conducted in connection with the preparation of the preliminary or draft version of the report required by section 3151 of the Defense Authorization Act for Fiscal Year 1991?

Secretary WATKINS. Because the committee has not yet been formed, there has been no meeting of the committee. However, the Department of Energy has an ongoing program investigating verification of fissile material and nuclear warhead controls. Results of these investigations will be made available to the committee for appropriate use.

Senator KENNEDY. How many meetings of the Technical Advisory Committee have been conducted in connection with preparing the final report?

Secretary WATKINS. Because the committee has not yet been formed, there has been no meeting of the committee.

Senator KENNEDY. Please provide the dates, location, and duration of any Technical Advisory Committee meetings that were open to the public.

Secretary WATKINS. Because the committee has not yet been formed, there has been no meeting of the committee.

Senator KENNEDY. Please provide the committee with copies of all statements or communications filed with the Technical Advisory Committee from "interested persons" who are not members of the committee.

Secretary WATKINS. The Technical Advisory Committee has not received any statements or communications addressed to it as of April 30, 1991.

POLICY OF OPENNESS

Senator KENNEDY. The Undersecretary of Energy, John C. Tuck, concluded his February 17, 1991, address to the American Association for the Advancement of Science as follows:

"We have opened the Department of Energy to many opinions, such as those of my colleagues here, because Admiral Watkins has urged the Department to hear the debate in the nation, and even better, to lead the debate rather than follow."

However, on February 28, 1991, your Assistant Secretary for Defense Programs, Richard Claytor, wrote a letter to Dr. John Nuckolls, the Director of the Lawrence Livermore National Laboratory, that clearly sought to discourage participation by University of California laboratory scientists in a "Soviet-American-Chinese conference to examine the environmental consequences of nuclear weapons development" that was being organized by another branch of the University of California, U. C. Irvine. Mr. Claytor's letter includes the following paragraph:

". . . In order to avoid any confusion or creating mis-impression regarding the relationship of this conference to the foreign policy or other activities of the United States Government, the Department of Energy will not be represented by any of its employees in the conference nor will the Department provide for government-financed attendance at the conference by any Department of Energy or laboratory employees. Should any laboratory employee determine to attend or participate, such attendance or participation must be entirely on that employee's personal time and be done at no expense to the government. Finally, should any laboratory employee determine to present a paper at this conference, that paper will have to have been prepared entirely on that employee's personal time without use of government-owned resources, and may not indicate any affiliation with the laboratory or with the Department of Energy. . . ."

I am frankly appalled by Assistant Secretary Claytor's letter. Do you see any inconsistency between Undersecretary Tuck's statement of February 17, citing your policy of openness, and Assistant Secretary Claytor's letter of February 28?

Secretary **WATKINS**. When the Department learned of this conference, it determined that there was no government sponsorship of the conference and, upon review, I concluded it was not in the national interest for the Department to sponsor laboratory or Department participation in the conference.

With respect to the Soviet Union, the Department of Energy has a bilateral arrangement on peaceful uses of atomic energy for the exchange of information on each country's environmental restoration and waste management programs. The Department has provided detailed planning documents, including technical and financial data, for all environmental waste management programs. In addition, the Department has had four official technical meetings with the Soviet delegation on the specific environmental programs of the United States and the U.S.S.R. Finally, the Department has developed four specific joint technology transfer tasks with the U.S.S.R. and has discussed in detail the Department's research and development programs. It did not appear that a separate channel from this carefully developed technical exchange was either required or desirable. It was decided that Department and laboratory representatives should remain within the agreed-to protocol in order to avoid any confusion or mis-impression of the foreign policy and related activities of the U.S. Government. Accordingly, the Department was not represented at this conference, nor did it make its funds available to finance the attendance of any Department of Energy or laboratory employees.

With respect to the People's Republic of China, the Department recognizes that there are concerns within the U.S. Government regarding the position of China with respect to weapons of mass destruction, including nuclear weapons proliferation. Accordingly, this was also an important consideration in arriving at the Department's position regarding attendance of Department and laboratory representatives at this conference.

With respect to the general policy of openness, we continue to promote this policy throughout all our dealings with the public and media consistent with Under Secretary Tuck's statement of February 17, unless there are national security consequences or special circumstances such as the ongoing relationship with the Soviet Union, discussed above.

It is not our policy to restrict laboratory personnel from attendance at meetings and conferences unless, of course, circumstances such as discussed above arise. Even then, the only question that arises is whether the Department will be represented or finance the participation of Department or laboratory personnel. The letter to the laboratory directors made it quite clear that it was not the intent of the Department to prohibit the participation of Department or laboratory personnel in this conference but merely to inform the laboratory directors that the Department would not be represented nor finance the participation of Department or laboratory personnel. This is in line with existing Department of Energy policy. As a matter of fact, on an annual basis, conferences in which our laboratories are represented number in the hundreds.

Senator **KENNEDY**. Did you personally approve either of both of these statements before they were issued?

Secretary **WATKINS**. I am responsible for the policy statements of the Department.

Senator **KENNEDY**. Which statement represents official Department of Energy policy?

Secretary **WATKINS**. Both statements represent departmental policy. They are not contradictory.

We continue to promote this general policy of openness throughout all our dealings with the public and media consistent with Under Secretary Tuck's statement of February 17, unless there are national security consequences or special circumstances such as the ongoing relationship with the Soviet Union, discussed in the response to a previous question relating to the environmental consequences of nuclear weapons development.

It is not our policy to restrict laboratory personnel from attendance at meetings and conferences unless, of course, circumstances such as discussed in the response to a previous question arise. Even then, the only question that arises is whether the Department will be represented or finance the participation of Department or laboratory personnel. The letter to the laboratory directors made it quite clear that it was not the intent of the Department to prohibit the participation of Department or laboratory personnel in this conference but merely to inform the laboratory directors that the Department would not be represented nor finance the participation of Department or laboratory personnel. This is in line with existing Department of Energy policy. As a matter of fact, on an annual basis, conferences in which our laboratories are represented number in the hundreds.

Senator **Kennedy**. In line with the policy articulated in Mr. Claytor's letter to Director Nuckolls, is it now Department of Energy policy to dictate in advance to its university contractors which academic meetings and conferences they may attend at government expense, and which will be considered ineligible for reimbursement, based on an alleged inconsistency with some undefined "foreign policy" litmus test, or some other criteria?

Secretary **Watkins**. This is not new Department of Energy policy. In line with existing Department of Energy policy, the letter to the laboratory directors made it quite clear that it was not the intent of the Department to prohibit the participation of Department or laboratory personnel in conferences, but merely to inform them that the Department would not be represented nor finance the participation of Department or laboratory personnel in this conference.

Senator **Kennedy**. Is Mr. Claytor's letter a one-time aberration that does not reflect your policy for the Department of Energy?

Secretary **Watkins**. No. Mr. Claytor's letter is in line with existing Department of Energy policy.

Senator **Kennedy**. Were Mr. Claytor's efforts at intimidation successful?

Secretary **Watkins**. Mr. Claytor's actions were in line with existing Department of Energy policy and were not intimidating in any way.

Senator **Kennedy**. My understanding is that approximately 15 Department of Energy employees were invited to the U. C. Irvine conference. How many Department of Energy employees attended?

Secretary **Watkins**. We have no record of the number of Department of Energy employees who attended because if they attended they did so as individuals and not in an official capacity.

Senator **Kennedy**. How many U. C. national laboratory employees attended the conference?

Secretary **Watkins**. We are aware that one employee of the Lawrence Livermore Laboratory attended the conference.

Senator **Kennedy**. Is the Department of Energy still declining to reimburse their expenses?

Secretary **Watkins**. Yes.

Senator **Kennedy**. Did the University of California agree to abide by the terms of Mr. Claytor's letter?

Secretary **Watkins**. I have been advised that a laboratory employee attended the conference and that his expenses were charged to the Department's contract with the University of California.

Senator **Kennedy**. What specific legal authority, if any, in the Department of Energy's contract with the University of California, sanctions prior restraint over U. C. employees of the kind attempted by Mr. Claytor's letter?

Secretary **Watkins**. The relevant clauses from the Department's contract with the University of California which relate to the allowability of costs are cited below:

Clause 5—General Administration of Program

(b) The University recognizes that the Department of Energy is responsible for the conduct of the program and for assuring that government funds are properly and effectively utilized, and that the proper discharge of the Department of Energy's responsibilities requires that it shall have (i) the power to exercise general control over the contract work to adequately fulfill these responsibilities and (ii) full-access to information concerning performance of such work.

Clause 6—Costs and Expenses

(b) *Allowable and Unallowable Costs.*

(1) The costs allowable and reimbursable under this contract shall be those costs which are actually incurred in performance of the work under this contract and which are necessary or incident thereto and shall include but not be limited to the following items of cost, without duplication of items covered by the payment to be made under paragraph (c) of this clause. The parties agree that the determination of the allowability of a cost hereunder shall be based on (i) whether reasonable judgment was exercised in view of all the circumstances with respect to the particular transaction and, (ii) recognition of all limitations expressly set forth in this contract.

(i) All wages and salaries of personnel under this contract not in excess of rates set forth in Appendix "A" unless otherwise approved by the Contracting Officer, materials, tools, machinery, equipment, facilities, supplies, communications, and utilities subject to approvals required under any other provision of this contract.

Senator **Kennedy**. What steps, if any, have you taken to erase the negative effects of Mr. Claytor's attempt to discourage the free and open exchange of ideas between the Department of Energy, its contractors, and the interested public?

Secretary **Watkins**. No additional steps are necessary.

[Whereupon, at 11:29 a.m., the committee adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEARS 1992 AND 1993

TUESDAY, APRIL 23, 1991

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

STRATEGIC ISSUES

The committee met, pursuant to notice, at 2:11 p.m., in room SR-222, Russell Senate Office Building, Senator J. James Exon presiding.

Committee members present: Senator Sam Nunn (chairman of the committee), Exon, Levin, Dixon, Wirth, Warner, Thurmond, Wallop, Lott, Coats, and Smith.

Committee staff members present: Richard D. DeBobes, counsel.

Professional staff members present: Robert G. Bell, William E. Hoehn, Jr., and T. Kirk McConnell.

Minority staff members present: Patrick A. Tucker, Minority staff director and counsel; Romie L. Brownlee, deputy staff director for the minority; Brian D. Dailey, George W. Lauffer, John E. Mansfield, and Ann Elise Sauer, professional staff members.

Staff assistants present: Kelli J. Corts and Mickie Jan Wise.

Committee members' assistants present: Andrew W. Johnson, assistant to Senator Exon; Kenneth N. Luongo, assistant to Senator Levin; William J. Lynn, assistant to Senator Kennedy; Phillip P. Upschulte, assistant to Senator Glenn; Jefferson B. Seabright, assistant to Senator Wirth; Terence M. Lynch, assistant to Senator Shelby; Melvin G. Dubee, assistant to Senator Byrd; James M. Bodner, assistant to Senator Cohen; Anthony H. Cordesman, assistant to Senator McCain; Thomas G. Moore, assistant to Senator Wallop; Samuel D. Adcock, assistant to Senator Lott; Eric H. Thoemmes, assistant to Senator Coats; Saul H. Singer and Ross Lindholm, assistants to Senator Mack; and Thomas L. Lankford, assistant to Senator Smith.

Senator EXON. The committee will please come to order.

OPENING STATEMENT OF SENATOR J. JAMES EXON, CHAIRMAN

Senator EXON. The Armed Services Committee meets this afternoon to continue its annual series of hearings with our unified and specified commanders.

As in previous years, the committee has asked the unified commanders to describe their military strategy, their operational requirements, and the extent to which the Defense budget request corrects their critical deficiencies, where they exist. The committee also continues to be very interested in the implementation within each command of the Goldwater-Nichols Department of Defense Reorganization Act of 1986.

This year, we have asked the unified commanders to address these issues in the context of Operation Desert Storm and the planned build-down of our military capability.

Among the issues that we would like to explore in light of these two developments are the role of each command in supporting the war effort and the implications of Operation Desert Storm for the long-term defense plans.

Another area that will be of considerable interest to this committee in considering these hearings, is the effect that the military force packages developed by General Powell will have on the unified commands.

General Powell has testified that four basic military force packages and four supporting capabilities will be needed to implement our strategic concepts and accomplish all of the missions that we require of our forces. The four basic force packages are Strategic Forces, Atlantic Forces, Pacific Forces, and Contingency Forces. The four supporting capabilities include a transportation capability, a space capability, a reconstitution capability, and a research and development capability.

This sounds like a realignment of the unified and specified commands and possibly a shift in some roles and missions.

The committee will want to hear our witness' views on how their commands fit into these force packages and supporting capabilities and what this would mean in terms of roles and missions for their component commands.

Finally, the committee has received testimony from the intelligence community that strongly indicates the Soviet strategic force modernization efforts continue at a brisk pace, with at least five new intercontinental ballistic missiles under development. Some would argue that the threat from the Soviet Union has gone away or grown so distant that we need not continue our own vigorous strategic modernization efforts. We would be most interested to hear your views. They are very important to this committee on this subject.

At this point, certainly let me welcome the two commanders who will help us to address all of the important issues today. First is Gen. Donald J. Kutyna, the Commander in Chief of the U.S. Space Command, and Gen. George L. Butler, the Commander in Chief of the U.S. Strategic Air Command.

Gentlemen, thank you very much for taking time to testify this afternoon.

General Kutyna, I would also like to express my sympathies for the trials your wife endured after her accident. I gather her operation went well and we wish you both the very best.

I realize that the unified commands vary in the extent to which they were involved in Operation Desert Storm. I know that both your commands played important roles, and I want to congratulate you on the splendid success of that operation. Everyone in the

Armed Forces deserves our thanks and our admiration for the tremendous performance of our military forces.

Senator Dixon has asked that his statement be made a part of the record.

[The prepared statement of Senator Dixon follows:]

Prepared Statement by Senator Alan J. Dixon

Mr. Chairman, it is a pleasure to welcome today the Commander of the Strategic Air Command, Gen. Lee Butler and the Commander of the Space Command, Gen. Donald Kutyna, two very distinguished Americans.

I look forward to hearing from General Butler on how he views the very changed global strategic environment.

I am very interested in how he, as Commander of all U.S. strategic missile and bomber forces, views his future force levels, consistent with a shrinking defense budget, to meet the national security strategy and maintain our strategic nuclear deterrence.

I am also interested in hearing from General Kutyna on his views of the threat to United States national security from space, especially the strategic nuclear threat, and hcw he intends to deal with that threat.

I look forward to the testimony of our two distinguished guests.

Thank you, Mr. Chairman.

Senator Exon. Before the witnesses present their opening remarks, let me ask Senator Thurmond if he would like to make any comments of an opening nature.

Senator Thurmond. Thank you, Mr. Chairman.

Mr. Chairman, I want to join you in welcoming the Commanders in Chief of the Space Command and the Strategic Air Command. Their testimony is an important factor in our consideration of the proposed fiscal year 1992 budget request.

General Kutyna and General Butler, I believe this is the first time you have each testified before the committee, at least in your capacity as CINCs. I welcome you and look forward to your testimony.

Mr. Chairman, I have a rather lengthy statement concerning the very important issues to be discussed today and I ask the indulgence of my colleagues and the witnesses permitting me to make these comments.

Last Thursday, the Subcommittee on Strategic Forces and Nuclear Deterrence received testimony from Dr. Larry Gershwin, the National Intelligence Officer for Soviet Strategic Forces. The testimony we heard from Dr. Gershwin was, in my opinion, very disturbing. In February, we received similar testimony, in more general terms, from General Soyster, the Director of the Defense Intelligence Agency. But the depth and scope of Dr. Gershwin's highly classified presentation punctuated the significance of the continuing disturbing trend in the Soviet strategic modernization program.

Specifically, as General Soyster outlined in his unclassified testimony, the Soviet Union is continuing unabated with the modernization of its SS–18 force, the SS–24 rail and fixed silo, and further deployments of the SS–25 single warhead mobile missiles. As Secretary Cheney stated in his testimony in February, and I quote: "In all, we see five or six new Soviet long-range ballistic missiles under development." At least two of those missiles under development are new ICBM follow-ons to the SS–24 and SS–25. Again, according to General Soyster, as part of that comprehensive missile development program, "Three new, more accurate, SLBM's are in various stages of research and development."

Under the expected START Treaty, the Soviets will retain significant improved ICBM hard target kill capability and nearly all Soviet submarines will carry long-range hard target capable SLBM's. When, or if, the five or six new ballistic missiles currently under development are deployed, the Soviets will have yet again significantly improved the lethality of their hard target kill force.

As General Soyster characterized their existing strategic force posture, and I quote: "These modernized forces will enable the Soviets to maintain their overall strategic nuclear warfighting posture. START will have only a minor impact on Soviet capabilities to hold key north American and Eurasian targets at risk."

This ongoing trend is most troubling. But my concern was compounded by the fiscal year 1992 budget proposal for the U.S. strategic modernization program. There seems to be a serious disconnect between the budget request in this area and the caution carefully identified by the administration witnesses over the past few months vis-a-vis the unfolding political and military trends in the Soviet Union.

Mr. Chairman, there is no question that, since 1985, the world has witnessed monumental changes in the Soviet Union. In the past 2 years alone, changes in the Soviet Union have been dramatic. But I think we all recognize that these early indications and promises of democratic change have begun to wane. We now face a Soviet Union in enormous turmoil. The potential for civil war and internal breakdown in authority is growing. Indeed, the Soviet Government, particularly the central authority, cannot even provide enough food for the Soviet people.

Soviet industry and economic performance continues its precipitous decline.

But as General Colin Powell stated before the committee on February 21, and I quote: "Accompanying these emerging realities are important enduring realities. The first is the reality of Soviet military power. While the Soviet military threat is finally being reduced, it will hardly disappear. Notwithstanding its evolving ideology and the intentions of its leadership, the Soviet Union remains the one country in the world with the means to destroy the United States in a single, devastating attack."

In addition to this immutable, reality, we should also consider carefully the recent clarion call of former Foreign Minister Edouard Shevardnadze: "No one can calculate the consequences of a social explosion capable of igniting not only befogged minds but also the giant stockpiles of nuclear and chemical weapons and nuclear power stations and in the zones already weakened by environmental and natural disasters and regions shaken by inter-ethnic strife."

In this context, it is ironic, then, that, while Soviet economic performance and the provision of basic services to the Soviet people are seriously deficient, we hear testimony from Dr. Gershwin that significant resources continue to be invested in Soviet strategic offensive and defensive modernization. Admittedly, this extensive modernization program appears structured around the limitations and ceilings of an expected START Treaty. Nonetheless, the amount of the investment and the seemingly unwavering pace of modernization is of enormous concern to and, I believe, to many of my colleagues on the committee.

With respect to the administration's proposed fiscal year 1992 budget request, of particular concern is the stark contrast and seeming disconnect between the continuing pace of the Soviet strategic modernization program and the significant reductions in U.S. strategic programs. Many of these reductions will leave unfilled the final elements of President Reagan's initiatives to redress widely recognized deficiencies in our deterrent force that emerged during the 1970s.

While the Soviet Union develops five to six new ballistic missiles, the fiscal year 1992 U.S. defense budget proposes to terminate the Peacekeeper production line, eliminate procurement funds for the rail garrison program, reduce significantly production of the D-5 submarine ballistic missile, delay for 5 years the D-5 backfit program, and terminate the Trident program after the 18th submarine which was funded in fiscal year 1991.

While funds were included for development of the Small ICBM, no plans are made for its procurement, and no significant, if any, research and development funds are included for the strategic modernization program in the early 21st century, such as a follow-on to the Trident.

Mr. Chairman, for well over 40 years, nuclear weapons have been instrumental in sustaining the peace between the United States and the Soviet Union. While the Cold War has receded, this does not mean we can or should undercut the credibility of our deterrent force.

We are, in my opinion, seriously close to encountering another window of vulnerability, only this time that window may be opened while a Republican is in the White House, albeit when the Congress is controlled by Democrats.

In short, given the continued Soviet investment in strategic modernization and the significant reductions in the U.S. strategic modernization proposed in this year's budget, we are, in my opinion, moving dangerously in that direction.

I know that General Butler argues in his prepared testimony that the B-2 program will be sufficient to buttress our deterrence posture. But in light of the substantial current and future increase in the lethality of Soviet prompt hard target kill capability, combined with improved defenses and deep underground construction I do not find much comfort in his reassurances.

A credible deterrent must, if deterrence fails, be able to promptly threaten what the Soviet leadership values most. This has been a central and enduring tenet of deterrence strategy throughout Democrat and Republic administrations, and declared changes in intentions do not mitigate its importance.

Intentions—I repeat, intentions—can change overnight. But military capabilities to defend against an aggressor take many years to build.

Thank you, Mr. Chairman.

Senator EXON. Thank you very much, Senator Thurmond.

Before I turn to our witnesses today, I wish to advise the witnesses and all the members of the committee that we have an adjacent room, SR-232A, reserved for us. It has been swept in case of the necessity of a closed hearing.

We hope that would not be necessary. But something might come up today that you generals feel can only be addressed in closed session. If that occurs, we will move a relatively short closed session after we finish this open public session.

First I would like to say that we will accept, without objection, the total written statements by both of the generals that we have here today as part of our record.

Before I would recognize both of you, I would like to ask this question, which we customarily ask in sessions of this type.

Before we hear from you, has either of you had to make changes in the prepared testimony that I have just made part of the record at the direction or insistence of others before it was delivered here today?

General KUTYNA. Negative, except minor security/policy comments.

General BUTLER. I made one small change, a recommendation following security and policy review. However, I did not consider the change to be substantive, and when my staff showed it to me, I accepted it immediately.

Senator EXON. Thank you very much.

We will, then, begin with your full prepared statement, if you care to go that way; or, if you would like to summarize your statement, we would be glad to give you full attention in any fashion you wish to proceed.

First, we will begin with General Kutyna, who has come here from the mountaintops, or inside the mountain, in the Rocky Mountains.

General, welcome to you. We are delighted to have you here today.

Please proceed.

STATEMENT OF GEN. DONALD J. KUTYNA, USAF, COMMANDER IN CHIEF, U.S. SPACE COMMAND

General KUTYNA. Thank you.

Senator Exon, distinguished members, thank you for the opportunity to appear today and thank you especially for your consideration of Lucy. I am sure she will be very honored to have been remembered by such an august body. She came home from the hospital Saturday and is well on the road to recovery.

Senator EXON. Good.

General KUTYNA. I am pleased to provide my written statement for the record which, hopefully, will cover the items highlighted in your letter of invitation. But because of the impact of the events that transpired in the Persian Gulf, my very brief opening remarks will focus on observations regarding the employment of space forces in Operations Desert Shield and Desert Storm.

This was the first theater level campaign in which space was solidly integrated into combat operations. It is a pleasure to report that DOD's space systems performed superbly.

The results clearly demonstrate that, space systems were essential to the degree of success achieved by the coalition forces.

During Desert Storm, space provided support across the full spectrum of conflict.

For years we have operated sensors which detect and provide warning of strategic ballistic missile attacks and pursued our mission of warning other Unified and Specified CINCs of such attacks in their area of responsibility. As soon as Desert Shield commenced, we stepped up and enhanced our support to General Schwarzkopf. Before the first major contingent of U.S. ground forces arrived in the theater of operations, we had taken action to provide prompt and reliable surveillance of missile launches to USCINCCENT in the Persian Gulf region. This capability significantly enhanced USCINCCENT ability to warn coalition forces and civil agencies of the attacks and to respond accordingly.

Highlighting another space resource, command and control of U.S. and coalition forces simply would not have been possible without military satellite communications. Over 90 percent of the COMM to and from the area of operations was completed through satellite systems.

Thousands of satellite communications receivers were used in the theaters, not only in the headquarters but down to the smallest unit levels.

Because Desert Shield lasted for a prolonged period, there was time to reconfigure and even move military satellite systems to meet our needs in the Gulf. Space Command, the Defense Communication Agency and the Joint Staff made use of that time to insure responsive satellite communications support was provided.

The results made it clear that space communication systems are capable of providing support to areas of conflict in a highly reliable manner and must remain a top priority.

In the area of navigation, it would be difficult to overstate the value of the NAVSTAR space global positioning system used during Desert Shield and Desert Storm. From land navigation to aerial bombardment, the global positioning system receivers played major roles in achieving mission success, and, the small, man-portable and vehicle mounted receivers were especially effective in support of joint and allied ground forces.

To successfully navigate in the featureless terrain and all weather conditions, and to capitalize on the demonstrated combat capabilities of navigational satellites, we need to insure that GPS receivers continue to be integrated into our future force structure.

Fortunately, Iraq was not equipped with smart weapons, which might use the global positioning system in their guidance system; and, therefore, risk to coalition forces was minimal.

However, in future conflicts, we will probably face enemies capable of exploiting GPS by using commercially available hardware. Therefore, we must continue to support the current national policy which would preclude the highly accurate GPS signal from being used against our forces.

Finally, the utility of satellite multi-spectral imagery was clearly demonstrated. The planning and execution of strike operations often depended on this imagery, which was provided by the U.S. commercial Landsat System.

This multi-spectral imagery was exploited heavily by our forces to prepare highly accurate maps, to plan airborne and naval landing operations, to identify areas that could bog down heavy equipment, and to display exploitable topographical information.

This demonstrated military utility argues strongly for continued Department of Defense access to this commercial capability, although probably with higher resolution and wider area coverage.

Finally, but most importantly, we must acknowledge the tremendous contribution of our people during Desert Storm. People have always been and are now our very top priority. As we enter an era of austere funding, continued support must be directed by those highly capable and motivated men and women who are key to a strong U.S. deterrent.

The restructuring of the defense budget must not be the expense of our people because they look to us to insure their needs and the needs of their families are attended to.

Mr. Chairman, the mission of USCINCSPACE is to support other unified and specified commands and their service components. Today, our soldiers, sailors, marines and airmen, based around the globe, are heavily dependent on a comparatively small, but highly capable, and absolutely vital, force of space-based systems.

In a future of decreased resources and reduced forward basing, we will rely even more heavily on space.

Space systems, by their very nature, will always be first on the scene. They must continue to be high in priority.

Thank you very much, sir.

[The prepared statement of General Kutyna follows:

PREPARED STATEMENT BY GEN. DONALD J. KUTYNA, USAF, COMMANDER IN CHIEF, U.S. SPACE COMMAND

INTRODUCTION

Mr. Chairman, distinguished members, thank you for the opportunity to appear today as the Commander in Chief (CINC) of the U.S. Space Command. My prepared statement addresses four major themes: the changing world scene as it relates to space, the evolving space and strategic nuclear threat to U.S. national security, a strategy for military space and strategic defense, and the high-priority space and strategic defense resources our military forces require to sustain deterrence and support our combatant commands around the world. Throughout this statement, the impact of events which transpired in Operations Desert Shield and Desert Storm will be highlighted.

CHANGING WORLD SCENE

Changes affecting U.S. security are occurring throughout the world. As recent events in the Persian Gulf clearly illustrated, changes in Third World nations continue to influence America's security posture. The spread of sophisticated military technologies, including ballistic missiles and nuclear, biological and chemical weapons, poses new threats to the United States and our allies. As we witnessed during Desert Storm, while the old technology short-range ballistic missiles possessed by Iraq did not cause vital damage to civilian population centers and allied forces, the psychological impact of these missiles upon the civilian community, their future military capabilities, and their potential to escalate conflict by drawing in additional combatants, has been clearly demonstrated. As the transition to a multipolar world continues, we must be prepared to deal with regional conflicts and crises which threaten our global interests, and which may arise with little or no warning. As land, sea, and air forces must be tailored to this new reality, our Nation must also have space forces which are designed and operated with this new situation in mind.

While most of America's attention was focused on events occurring in the Gulf, the character of the U.S.-Soviet relationship continued to evolve. Let there be no doubt that those of us in uniform not only applaud this process, but we are making every effort to accommodate to its sweeping consequences.

Within the Eastern bloc, the extraordinary realignment of political, economic, and military power is astounding. Soviet retrenchment and the formal disbanding of the Warsaw Pact require new approaches to collective security. However, we must proceed with caution. The Soviet Union remains the only country in the world with the means to destroy the United States and our allies with a single, cataclysmic attack. It is important to remember that while military capabilities take years to build and could take as many years to reduce, intentions and leadership can change overnight. Soviet actions in the Baltic states clearly underscore this uncertainty.

We see these revolutionary changes as positive and are optimistic regarding their potential. Nevertheless, we must react prudently to political changes which could be rapidly reversed. President Gorbachev himself has noted, "There are no guarantees that the positive processes (we) have begun are irreversible." We must not allow the defense of America and our ability to defend our worldwide interests to be put at risk during this era of global uncertainty. Space systems and forces will be absolutely essential to meeting our national security interests in this period of readjustment.

EVOLVING SPACE AND STRATEGIC DEFENSE THREAT

As a result of the rapid changes in the Soviet Union, there's a growing perception that the entire Soviet threat is diminishing. This interpretation is false—while President Gorbachev may be reducing his conventional capabilities, he is also restructuring and modernizing his strategic forces—and we expect that to continue.

These actions present a challenge to maintain appropriate military strength in this complex, emerging security environment. Accordingly, the restructuring and scale-down of our own military forces must be done carefully, with Soviet military capabilities and other threats clearly understood.

We do not expect unilateral reductions in Soviet strategic forces. In the Soviet view, unilateral reductions would weaken their nuclear deterrent and undercut their superpower status. A START Treaty will limit Soviet strategic offensive forces; but it will not reverse their modernization programs. In the ballistic missile arena, the trend remains clear. In 1972, the Soviets had about 2,000 warheads. Today, they are approaching 11,000 warheads with more capable, survivable, and mobile delivery systems. Even with an arms agreement, it's clear the Soviets will have modernized ballistic missile systems with sufficient warheads to keep most of our vital national resources at risk.

New modifications of the SS-18 are a clear signal that the Kremlin's nuclear strategy continues high priority toward maintaining a potent nuclear strike force. They're also making their ballistic missile forces more survivable. Over 30 rail-mobile SS-24s, and 280 road-mobile SS-25s have been deployed. By the year 2000, mobile systems could compose about two-thirds of the Soviet ICBM force—a sobering thought for future commanders of our strategic offensive and defensive forces.

While today's strategic threat to U.S. and allied security is primarily from the Soviet Union, tomorrow's may come from other countries as well. Saddam Hussein's brutal pillage of Kuwait and missile attacks on Saudi Arabia and Israel should serve as a strong reminder that even relatively small states, propelled by the combination of unstable leadership and modern weapons, can be a threat to our worldwide interests. A particular concern to the U.S. Space Command is the number of countries possessing short and medium-range ballistic missiles. This growing missile threat, coupled with the proliferation of nuclear, biological, and chemical weapons, requires that we assess our long-term security needs in a broader context than an East-West conflict. As you are aware, CIA Director William Webster has informed Congress that by the year 2000 at least six Third World countries probably will have ballistic missiles with ranges up to 3,300 miles. He also said that four of the countries developing missile capabilities already have nuclear weapons or advanced nuclear weapons development programs. By the end of the decade, an additional four nations could develop similar capabilities. It is sobering to consider that the Saddam Husseins of the future—or their surrogates—may be capable of holding us at risk with ballistic missiles. As recent events have dramatically illustrated, traditional forms of deterrence are ineffective against an irrational leader.

In the 1980s the Soviets increased and modernized their strategic bomber force. They developed the Bear H Air Launched Cruise Missile (ALCM) carrier and, in 1988, deployed their newest bomber, the Blackjack, which flies at Mach 2 and has an unrefueled range of over 4000 miles. These developments typify Soviet resolve to increase their nuclear strike capability. While those increases may be tempered by future arms negotiations, we are convinced that we will face a Soviet bomber threat in the 1990s that will be modern, sophisticated, and highly dependent upon cruise missiles.

The Soviets continue to invest in strategic defense. President Gorbachev acknowledged several years ago: "The Soviet Union is doing all that the United States is doing, and I guess we are engaged in research, basic research, which relates to these aspects which are covered by the SDI of the United States." The Soviet effort, involves significant investment of capital and manpower. The Soviets maintain the world's only operational BMD system comprising a two-layer defense around Moscow.

Soviet satellite systems are also an important part of the overall strategic threat. The capabilities of their space-based reconnaissance systems are increasing and of concern to all our theater commanders. We see steady improvements in the Soviets' ability to locate our globally deployed forces and provide timely information. They possess and continue to operate space-based targeting systems, which are used to locate and target U.S. and allied forces, to support Soviet combat operations. Radar and electronic ocean reconnaissance satellites are used to locate and track our naval forces at sea, while photo reconnaissance and other intelligence satellites can locate ground and air forces.

The proliferation of remote sensing systems with military applications in the Third World and the commercial availability of militarily significant satellite imagery maybe particularly significant. Just as we would not tolerate enemy reconnaissance aircraft flying over our forces, we must not allow any enemy satellites to provide militarily useful data from space in wartime. Our forces obviously need a capability to counter this threat.

As you know, the Soviets have had the ability to degrade, disrupt, and destroy some of our satellites since the 1970s. They have four distinct ASAT technologies which could be further developed to threaten all of our satellites from low earth to geosynchronous orbits. Their co-orbital ASAT system at Tyuratam is operational and still maintained in a state of readiness. The Soviets also acknowledge that their antiballistic missile system has an inherent ASAT capability and it's evident by their own statements that they have the doctrine to use it against our satellites if they so choose. Their high-energy laser and electronic warfare technologies may provide another means of degrading some of our high-altitude satellites.

To counter this threat, our space systems must be survivable and include sufficient on-orbit spares to allow reconstitution in wartime. In the conflict with Iraq, our forces' effectiveness was greatly multiplied by space systems, principally in the areas of navigation, communications, weather, and surveillance. If we are to maintain peak efficiency of our combat forces in an era of reduced force levels and fewer forward operating locations, our space systems must be available to our land, sea, and air forces when they are needed in both peacetime and wartime.

SPACE AND STRATEGIC DEFENSE STRATEGY

U.S. national security is based on the principle of deterring wars before being forced to fight them. In fact, most nations have three primary interrelated strategic objectives: First and foremost, to deter hostilities; second, to control escalation should tensions rise; and third, should deterrence fail, to bring an end to conflict as rapidly as possible on favorable terms. A variety of space systems contribute to achieving these objectives.

While those basic principles remain intact, Secretary Cheney and General Powell have clearly explained that our national military strategy is changing, and that our force structure will be reduced. The Secretary and the Chairman have included the Combatant Commanders in the process of developing the strategy and our force structure requirements. Last August for example, General Powell discussed with us his views on the changing threat, how our strategy was evolving, and how our forces might best be structured to properly execute the strategy. Recognizing the inevitability of force reductions, the Chairman asked us to develop a "Base Force" necessary to successfully accomplish our missions. During this process, I emphasized that current space systems are essential to our land, sea, and air forces no matter how these forces are structured, where they are deployed, or how they are employed in combat.

Space is an enduring reality which, like mobility forces, provides support across the complete spectrum of conflict for all warfighting CINCs. Effective space capability is clearly a fundamental element of superpower status. It is important enough, broad enough, and unique enough to stand alone as a critical element of our Nation's military posture.

Space forces are not entirely strategic. Rather, they also provide current and future contributions which distinctly support the tactical warfighter. Today, approximately 70 percent of our military space effort is tactical in nature and the vast majority of the support we provide is to our conventional forces. Looking to the future, the ability of the United States to use any of its force packages depends heavily on its ability to operate in the high ground of space.

Space systems provide our forces with vital communications, navigation, and surveillance support. Communications satellites are used for the long-haul voice and data networks required for effective command of widely dispersed combat forces. During Operation Desert Shield/Desert Storm, for example, a large segment of inter-theater communications and a significant percentage of intra-theater communications were over military satellite communications systems. With the ongoing deployment of the NAVSTAR Global Positioning System (GPS), precise navigation information is available to ground, sea, and air force operations worldwide. Military surveillance satellites provide real-time environmental information and missile warning to the National Command Authorities and—within design limits—to our forces no matter where they are deployed. Today, the missile warning function is perhaps the most important of those performed by military space systems because it provides warning against the greatest single threat to our country, the nuclear ballistic missile. Space-based ballistic missile surveillance systems, supported by ground radars, provide our decision makers with the timely and unambiguous information necessary to decide on defensive and retaliatory courses of action.

Space operations tomorrow must be characterized by satellites with high readiness standards, a combat-ready force structure, improved sustainability, and modern technology. Our continued pursuit of these goals helps ensure that space systems will be able to further increase the effectiveness of terrestrial forces at all levels of conflict.

Before proceeding, it should be noted that Soviet space strategy is designed to support their geopolitical objectives and—faithful to longstanding Soviet doctrine—be integrated with combined arms operations. It's difficult to envision that any conflict involving the Soviets' vital interests would be confined to earth. The Soviets view space as a means to substantially increase the effectiveness of their terrestrial forces. As the Chief of the Soviet General Staff, General M. Moiseyev, has stated, "The implementation of space programs for military purposes will enhance the combat effectiveness of our armed forces by a factor of 1.5 to 2."

Accurately quantifying the effect U.S. satellites have in conflict is difficult. Nevertheless, space has played a vital role in all U.S. conventional operations during the 1980s. As an example, during Operation Earnest Will in the Persian Gulf 4 years ago, U.S. and allied commanders employed GPS terminals on ships and helicopters to assist in minesweeping operations. The location and destruction of enemy mines resulted in safe passage for all vessels and reduced loss of equipment and personnel. Space systems provided extensive support during the planning and execution of our successful military strike in Libya. In particular, space system support dramatically enhanced aircrew performance during the execution of their missions. Over a year ago in Panama, military space systems provided extensive long-haul communications support that played an important role in Operation Just Cause. In addition, our satellites enabled accurate weather prediction—something that greatly aided the operation's speedy and successful conclusion.

Finally, Operation Desert Storm demonstrated most convincingly that space systems are vital and are an essential element of our force posture. While we did not war in space, Desert Storm was the first campaign-level combat operation where space was solidly integrated into combat operations and was vital to the degree of success achieved in the conflict. Communications, navigation, environmental monitoring, and space-based surveillance systems were on-scene and available to our theater forces from the moment the crisis began until the last shot was fired.

Effective command and control of U.S. and coalition forces simply would have been impossible without military satellite communications systems. Over 90 percent of the communications to and from the area of operations were carried over satellite systems, and thousands of satellite communications receivers were used in theater down to unit level. The lack of a viable communications infrastructure in many portions of Saudi Arabia and Kuwait increased our dependence on satellite systems for intra-theater command and control as well.

For years we have operated sensors which support warning of strategic ballistic missile attacks and pursued our mission of warning other Unified and Specified CINCs of such attacks in their area of responsibility. As soon as Desert Shield commenced, we stepped up and enhanced our support to General Schwarzkopf. Before the first major contingent of U.S. ground forces arrived in the theater of operations, we had taken action to facilitate the flow of warning information to USCINCCENT in the Persian Gulf region.

One of the major problems encountered by USCENTCOM forces was navigating in a featureless environment. It would be difficult to overstate the value of the

NAVSTAR GPS system during Desert Shield and Desert Storm operations. The Commander of the 101st Air Assault Division, Major General Binford Peay, wrote that his GPS receivers were "the most popular new piece of equipment in the desert." On a more down to earth level, one Army sergeant said of his GPS receiver "if it could make coffee, I'd marry it." Precision bombing and artillery fire support, the precise positioning of maneuvering troop formations, and certain special operations were greatly enhanced or made possible by the NAVSTAR GPS system. This system has proved to be an unqualified success. The lessons learned during Desert Storm will further increase our ability to exploit this valuable hardware.

The signal from GPS can be received by anyone who cares to purchase any of several commercially marketed receivers. Recognizing potential for enemy use, the system was designed for signal "encryption" which denies highly accurate position data to unauthorized users. If this system (known as Selective Availability (SA)) is turned on, a ground receiver must be equipped with a decoding device to achieve full GPS position and velocity accuracy. Commercial receivers do not have this SA capability. When we were forced into a quick buy of commercial receivers to support the desert operations, we made a conscious decision to turn SA off and risk allowing enemy use. It was quite rightly determined that coalition forces, fighting a mobile war in unfamiliar territory with non-SA equipped ground receivers would benefit more than our enemy who was committed to static defense in his own back yard. Iraq was not equipped with smart weapons which might use GPS in their guidance systems, so risk to coalition forces was minimal. In light of the startling success and praise heaped on GPS by the troops, this situation will not be prevalent in the future. In fact, advertisements have already appeared in print offering GPS-equipped military aircraft on the international arms market.

To avoid future risk to our forces, I strongly support the current national policy—operate the GPS satellites with SA on. This means that our Armed Forces will have to reinvest in vehicle and man-portable receivers incorporating SA decryption. But, if full GPS accuracy (i.e. SA off) is available to the public, commercial systems will proliferate and there will be irresistible pressure to maintain signal accuracy in time of crisis. I believe this would place our forces at risk from smart weapons using GPS guidance.

Another familiar space system, the Defense Meteorological Satellite Program (DMSP), also contributed significantly to the safe and highly effective planning and application of our combat power. The harsh and rapidly changing environment in Desert Storm placed a premium on timely and accurate weather data received directly from our DMSP satellites throughout the crisis and subsequent combat operations. Finally, DMSP data assisted planners in determing weapons loads, and was a particularly important factor in the precision our forces enjoyed with laser guided weapons. Knowledge of weather over the target area greatly optimized the application of aircraft and their weapons systems. When the go-ahead for the ground campaign was under consideration, space-provided weather data was an obvious and important factor in the decision.

The first U.S. troops deploying to Saudi Arabia this past summer were equipped with maps prepared from LANDSAT multi-spectral imagery (MSI). During the course of Desert Shield, thousands of high quality maps and charts were provided to our ground forces using LANDSAT imagery. While this system is currently funded by the Department of Commerce, it has clearly demonstrated its military utility. This demonstrated military utility argues strongly for continued Department of Defense access to this commercial capability.

We have completed a thorough review of our support to Operation Desert Shield and a similar review of Desert Storm is underway. We've learned a great deal about the strengths and limitations of our satellite systems. We are working hard to offset limitations, and to identify additional applications. Our space systems have demonstrated great value and have proven that they significantly enhance the effectiveness of the world's finest land, sea, and air forces.

As we prepare to enter the 21st century, we must use the unique advantages provided by space to support reduced ground, naval, and air forces. As General Moiseyev is confident that space systems enhance Soviet terrestrial forces' combat effectiveness by up to 100 percent, I'm even more confident that our space systems will enhance our forces' effectiveness at least as much.

Accordingly, we believe money spent on military space is money well invested. To support a declining force structure, the Nation must pursue a strategy that ensures our country's access to, and ability to operate in, space during wartime. Enhancing terrestrial force operations and degrading those of an adversary are keys to concluding conflicts on favorable terms. It's not enough just to provide satellites for our use, one must acquire and maintain control of the space environment. This involves defending friendly satellites from hostile attack, providing assured access to space, and when necessary denying an adversary the use of his space assets. With space control established, we can then provide essential force enhancement support to our terrestrial forces. Unless we have a sound space control capability, we may find ourselves in a conflict with a nation with space forces while we have no means to prevent space supported attacks on ourselves or our allies.

During Desert Storm the Allied Coalition was able to covertly reposition forces immediately before the ground combat phase began because the Iraqis did not have an aerial surveillance capability. This move allowed General Schwarzkopf to completely surprise Iraqi ground forces and minimize allied casualties. We could not have done this against an adversary equipped with reconnaissance satellites unless we denied the enemy the use of his satellites. This obviously argues for an anti-satellite capability.

Finally, our country should continue a steady course leading to the decision on whether or not to deploy a ballistic missile defense (BMD) system. The Strategic Defense Initiative Organization (SDIO) has adopted an architecture that provides a near-term Global Protection Against Limited Strikes (GPALS) as an evolutionary step toward a more complete strategic defense system. The current GPALS program is a promising start toward dealing with the concern of accidental launch as well as the emerging ballistic missile threat that exists in a number of countries in the world; however, the Soviet Union's strategic capabilities remain. Therefore, I support an approach and design that will evolve to meet the broader Phase I requirements—an approach that meets the strategic capabilities that we will face at the end of this decade.

HIGH-PRIORITY SPACE PROGRAMS

There are several high-priority space programs that have an impact upon the implementation of our strategy and warrant your attention and support. We must continue improvements to our tactical warning and attack assessment system, both in enhanced satellite systems and in the Cheyenne Mountain Upgrade programs. I am pleased to report that the Department of Defense has initiated a plan to begin a competitive program to provide an enhanced space-based missile warning capability.

We require an operational antisatellite capability to counter an adversary's satellite that would target our forces in wartime. We also require a more responsive and diversified launch capability to ensure our forces will continue to receive crucial support from space—especially after hostilities have been initiated. Present deficiencies in our military space posture provide a considerable wartime advantage to the Soviets.

Moreover, we must support the restructured MILSTAR program which provides new emphasis to tactical support. Beyond these basic systems, there are three new systems which have potential to provide a significant leap in our military space capabilities: a space-based wide area surveillance system (SBWAS), a family of cost effective tactical satellite systems, and a follow-on multi-spectral imagery (MSI) capability.

TACTICAL WARNING/ATTACK ASSESSMENT

Today, we are laying the foundation for improved Tactical Warning/Attack Assessment (TW/AA) and future space operations supported by upgrading our ground and space-based surveillance assets and our systems in Cheyenne Mountain. DOD has recently adopted a new strategy to acquire a follow-on program to the Defense Support Program (DSP) which will correct the system's most significant deficiencies. I strongly support this strategy, as it will implement needed near term improvements and allow a growth path to meet the requirements of the future. In addition to countering a Soviet strategic ballistic missile threat which has evolved in capability beyond that for which DSP was designed, our satellite warning systems must be able to provide the earliest possible reliable and unambiguous warning against the growing number of Third World tactical ballistic missile systems which our forces are likely to encounter in future conflicts. Improvements to Command Center Processing and Display Systems, survivable integrated communications, as well as a replacement to the Cheyenne Mountain AFB Communications System Segment need continued support as well. These programs are critical to meeting our future TW/AA requirements, in peacetime, crisis, and war.

ASAT

The fundamental argument to be made for developing antisatellite systems is the need to put at risk an adversary's space forces which are integral to his weapons and targeting systems. With this warfighting ability degraded, the combat scale would be tipped in our direction and U.S. forces could fight with the upper hand, potentially sustaining fewer losses. This combat edge will be critical as our adversaries integrate space into their terrestrial forces. We have a requirement for an antisatellite capability which is flexible and responsive to meet space control objectives stated in the National Space Policy. Last year, the Defense Acquisition Board's approval of Milestone I Demonstration/Validation phase for a ground-based kinetic energy system is a step in the right direction, and that will hopefully continue.

SPACE LAUNCH

Our current space launch infrastructure, including launch vehicles and supporting facilities, is in need of sustained improvement and modification to support the Nation's needs into the next century. Among the major concerns I believe need to be addressed in such a program are: capacity constraints at the launch complexes and launch ranges; obsolete and decaying launch operations support elements; limited resiliency for recovery from catastrophic failures; lack of flexibility caused by launch schedules driven primarily by hardware availability and long payload preparation timelines; and today's high launch and integrations costs.

I strongly support the Department's commitment to resolve these concerns. To this end, the DOD is in the process of implementing a balanced strategy which will assure a robust launch capability well into the next century. There are two key components of this strategy: (1) improve and modernize current launch systems and supporting facilities to provide sufficient capability to carry us into the next century; (2) develop, in cooperation with NASA, a new launch system that will meet our long term needs for significantly improving launch responsiveness, operability, and flexibility while simultaneously reducing costs.

In my view, only through a comprehensive strategy of this nature, i.e., one that balances near-term improvement and modernization with the longer-term need for a new launch system, can we obtain the launch capabilities necessary to fully support the space needs of our warfighters.

MILSTAR

MILSTAR will form the core warfighting element of our space communications architecture. In response to congressional concerns and the changing world, the program has been restructured to meet Third World and conventional contingencies. Yet, it retains the essential features for positive command and control of our strategic forces. Unlike current systems, MILSTAR will provide antijam, interoperable communications and the flexibility to quickly adjust capacity to meet a wide range of operational requirements, including joint operations such as Desert Storm. The addition of a medium data rate capability will ensure that tactical commanders have access to a wide variety of battle management data in a jamming environment. The new MILSTAR's conventional focus will achieve a significant increase in capacity, at projected cost savings of 35 percent over the next 5 years and 25 percent over its life cycle.

SPACE-BASED WIDE-AREA SURVEILLANCE

I'm convinced a space-based wide-area surveillance system will give combatant commanders invaluable *awareness, assessment,* and *warning* information on global air and maritime threats—a capability that increases in importance as we continue our evolution to a multipolar world environment. An operationally effective space-based wide-area surveillance system has the potential to revolutionize tactics and largely deny an adversary the element of surprise. Space-based wide-area surveillance concepts are being defined to provide information to combat commands vulnerable to air-breathing or ocean surface threats—possibly detecting and tracking these threats from their points of origin. All Unified and Specified Commands are strong in their belief that such a system is required and must provide continuous, near-real-time, all-weather, day-night coverage directly to combat forces.

TACTICAL SATELLITES

As stated before, we believe that space systems will highly leverage our investment in ground, sea, and air forces. With that in mind, I see potential in force-enhancing tactical satellite (TACSAT) systems. Based on an inventory of ready-to-launch boosters and satellite mission packages tailored to the needs of our warfighting commanders, TACSAT systems could provide our forces much needed real-time support that could give us the advantage. TACSATs would not supplant other capabilities, but could be a means of augmenting our existing force structure in crisis or war. We need to continue studies and developments to determine to what degree such systems may prove to be cost effective, and operationally feasible.

MULTI-SPECTRAL IMAGERY

The LANDSAT satellite system, a non-DOD system, provides wide area multispectral information that is useful to U.S. forces. During Desert Storm, multi-spectral imagery from this civil asset proved its utility by contributing to scene change detection, as well as to trafficability and terrain analysis. It also provided warfighters with concealment and deception detection information. This type of information is important to the conduct of conventional and strategic operations, as well as low-intensity conflict. I strongly support fielding an enhanced LANDSAT.

PEOPLE

I would be remiss in my responsibilities if I did not also say a word about people. People have always been and are now our top priority. As we enter an era of austere funding, continued support should be directed to those highly capable forces—motivated men and women—that are key to a strong U.S. deterrent. The restructuring of the defense budget must not be at the expense of people programs. While some personnel reductions will be required, the people who remain with the military must continue to be well supported. Erosion of the personnel support system will ultimately impact USSPACECOM's readiness and operational capability. We will ask much of our Armed Forces in the months and years ahead, and they look to us to ensure their needs and the needs of their families are attended to. We are obligated to meet those needs.

Mr. Chairman, my mission as USCINCSPACE is to support other Unified and Specified Commands and their service components. Space systems support soldiers, sailors, marines, and airmen based around the globe. Today, our forces are heavily dependent on the comparatively small, but highly capable and absolutely vital force structure of space-based systems. In a future comprised of decreased, retrenched forces, we will rely even more on space. Space systems will always be first on the scene. They must continue to be high in priority.

Senator EXON. We appreciate very much your fine statement. We will have some questions for you, General Kutyna, after we hear from General Butler, the SAC Commander.

General, welcome back. We are glad to have you here again.

STATEMENT OF GEN. GEORGE L. BUTLER, USAF, COMMANDER IN CHIEF, U.S. STRATEGIC AIR COMMAND

General BUTLER. Thank you, Senator. It's nice to be here.

I will, in fact, make very brief opening comments and will submit my formal opening statement for the record.

I would like to begin by noting for the record that I inherited a superb command from General Jack Chain. My equipment, facilities, and people are in great shape. His footprints are wide and deep throughout SAC.

It is also clear, Mr. Chairman, that my watch will encompass a very different set of strategic circumstances. I suppose you could say that I am the first CINCSAC to be installed in what has been billed as the post-Cold War era, or the New Emerging World Order. That is perhaps best manifested in the circumstances in the Gulf in which SAC forces played a major role.

I had over 16,000 people, more than 70 bombers, more than 300 tankers, and half my strategic reconnaissance assets involved in that conflict, and they did a marvelous job. At the same time, as has been noted in both of your statements, I have to be very sobered by the fact that the Soviets continue with a strategic nuclear modernization program of extraordinary scope and pace, one which obviously far exceeds our own.

This does not make economic sense. It is very difficult to discern the logic of that enormous investment of resources when they are in such difficult circumstances. But, nonetheless, the SS-24s and the SS-25s continue to roll off the production line. In my capacity as CINCSAC, that is a reality for which I am personally charged, and it is one that gives me great pause.

The upshot, then, is that I have a foot in two worlds, Mr. Chairman. One is the world which is represented by the lingering aftermath of the Cold War, and a second is the uncertain and unsettling era emerging from the shadow of the Cold War.

My challenge, as CINCSAC, is to posture my command to play its irreplaceable role in these two unfolding dramas, that is, to insure the continuing strength of the nuclear deterrent triad and to enhance the contribution of Strategic Air Command to what I have called my conventional warfighting triad, that is, the strategic reconnaissance assets, the tankers, and, most importantly, our bombers, given their remarkable role in Desert Shield/Desert Storm and underwriting the new national military strategy.

This twin triad of capabilities and responsibilities forms my vision for the future of my command, Mr. Chairman: nuclear deterrence, encompassing ICBM's, bombers, and, of course, the Navy's SLBM's, and conventional warfighting, comprising reconnaissance, aerial fueling and bomber assets.

Let me close with just a word with respect to my priorities.

As General Kutyna indicated, the real lesson of Desert Storm was about people: the tremendous value added by smart, motivated, well-trained professionals, who overcame countless obstacles and hardships to win a triumphant victory. It proves the thesis that George Patton advanced many years ago, that wars ultimately are won by men, not by machines. I might update that by saying "men and women."

Thus, the welfare, morale, and training of my people is absolutely essential to preserve their store of inventiveness and the devotion that carried the day in the Gulf.

Second is readiness. My mission never stops. Nuclear deterrence is a 24 hour a day, 365 day a year business, and in the national security arena, the need for immediate response to incipient or actual aggression can arise on a moment's notice.

Third is modernization. It is the key to maintaining the capabilities resident in SAC's twin triad. Within this panoply of forces, my number one priority, by far, is the bomber force, given that it plays a critical role in both nuclear deterrence and conventional warfighting.

Finally, and in some respects, perhaps most important, is my responsibility and my intention to maintain an intelligent and effective SIOP, fully integrated and consistent with national guidance, force structure, modernization requirements, and arms control.

That completes my statement, Mr. Chairman. I would be happy to respond to your questions.

[The prepared statement of General Butler follows:]

PREPARED STATEMENT BY GEN. LEE BUTLER, COMMANDER IN CHIEF, STRATEGIC AIR COMMAND

INTRODUCTION

Mr. Chairman and distinguished Senators. I am pleased to respond to the committee's letter of April 4, 1991 and to provide for the record this report and my observations on the rationale underlying the forces assigned to, and the programs requested for, the Strategic Air Command.

GUIDING PERSPECTIVES

Three perspectives guided preparation of this statement: First, I have the distinction and the challenge of being the first post-Cold War CINCSAC and Director, Joint Strategic Target Planning Staff. Second, my presence today puts me in a unique position vis-a-vis my previous appointment as the Director, Strategic Plans and Policy, Joint Staff, with responsibility for drafting the new national military strategy. Now, I find myself called upon to describe how that strategy affects the Strategic Air Command with respect to arms control, the Single Integrated Operational Plan for nuclear weapons employment, and events within the Soviet Union. Third, the statutory responsibilities of CINCSAC and Director, JSTPS are compelling—they occupy the center of my attention. I feel very keenly the obligation to ensure deterrence by direct management of two legs of the strategic nuclear Triad and direction of target base planning and development for all three legs. Moreover, the inherent flexibility and consequent conventional tasks of SAC forces require that I also give strong emphasis to those aspects of the new military strategy that deal with the projection of conventional power to secure U.S. interests around the globe.

Before discussing my vision of Strategic Air Command's role and posture in the years ahead, I want to offer a commander's perspective of the overarching strategic issues which guide my views. By now, you have heard from the Secretary of Defense and the Chairman, Joint Chiefs of Staff on the new directions in our national military strategy. Let me briefly sketch my own appreciation of the new guidance—not to repeat what you have heard, but to assure you that SAC is very much in step with its central precepts.

In my view, the emerging post-Cold War environment is dominated by six new and historic forces that are largely reshaping the global strategic environment: (1) Soviet retrenchment and the end of the Cold War, events so consequential they are akin to a virtual second Russian Revolution; (2) German reunification and its impact on the European security agenda; (3) the emerging prospects for a 21st century Concert of Europe; (4) the intensification of intractable, regional strife and conflict, exacerbated by impatient populations and the proliferation of high technology weapons; (5) catastrophic failures in the human condition due to economic and political disintegration in areas of the Third World; and (6) the rise of new centers of power with either hegemonic or strongly competitive goals. Taken together, these forces represent a volcanic upset of longstanding strategic calculations and call for a sweeping reassessment of traditional views and approaches.

Simultaneously, the domestic landscape also is changing. Internal pressures and competition for U.S. budget dollars in the face of a diminished threat, coupled with demands for a balanced budget, likely will lead to a more restrained, insular national preference with respect to the U.S. role as a world power.

These international and domestic imperatives combine to present a unique circumstance for military planners. The international scene will become more diverse, more complex, and more competitive than ever before. At the same time, the pressure to reduce further U.S. defense expenditures will continue. These cross-currents confront the Department of Defense with the challenge of meeting enduring interests and commitments while simultaneously shrinking military force structure and reducing forward presence. As I noted at the outset, I find this historic juncture of new security challenges and shrinking resources especially compelling given my mission of strategic nuclear deterrence. Because, of all the Nation's military Commanders in Chief, I must keep a particularly wary eye on the receding era of East-West confrontation, even as I seek to exploit the benefits of an improved U.S.-Soviet relationship in the interest of a greater contribution to future U.S. conventional response capabilities.

NEW MILITARY STRATEGY

The new military strategy takes these considerations fully into account. While acknowledging a changing strategic landscape, the strategy recognizes that U.S. fundamental security objectives largely remain constant. The realities are that, now and in the foreseeable future, the Soviet Union will remain the only nation with nuclear forces able to destroy the U.S., virtually within 30 minutes. Beyond this sobering reality, it is equally clear that the U.S. will retain vital interests across the Atlantic and across the Pacific. Finally, we will continue to face the certain prospect of spontaneous, unpredictable crises that compel immediate responses to secure U.S. lives and interests. These realities form the basis for the Chairman's Base Force concept—the linchpin of the new national military strategy.

BASE FORCE CONCEPT

The base force concept described in the President's fiscal year 1992 budget provides a realistic vision of military needs in the post-Cold War era, with its emphasis on sufficient forces and flexibility to meet enduring requirements and unexpected demands. It defines the minimum force levels, consistent with a shrinking defense budget, to meet the national military strategy and its objectives. The highest priority in the base force concept is the maintenance of nuclear deterrent capability. On the conventional forces side, the longstanding focus on global war with the Soviets is moderated significantly in recognition of the far greater likelihood of regional contingencies. The base force concept envisions the ability to protect worldwide interests with smaller, but highly responsive and flexible forces, operating from fewer bases and with reduced overseas presence. To meet these goals, it anticipates reshaping our military forces and tailoring them more specifically to enduring global realities. In addition, strong emphasis has been placed on the need for early, prepackaged options with existing forces (Measured Deterrence Response) and a flexible range of mobilization responses designed to quickly gear up U.S. and allied capabilities in response to a prospective resurgent Soviet threat to Europe (Graduated Mobilization Response).

IMPLICATIONS FOR STRATEGIC AIR COMMAND

The new strategy and its Base Force have several implications for the Strategic Air Command. First and foremost, it introduces substantial change in SAC forces, modernization programs and contributions to warfighting. These directed changes combine with the lingering uncertainties of budget outcomes, basing structure, arms control and events in the Soviet Union, to make for an extremely complex leadership and management environment. Consequently, I have spent the bulk of my first weeks in office reassessing the corporate vision that has guided SAC for the 45 years of its existence. My conclusion is that while we are still on sound footing, both the seemingly interminable debate over strategic nuclear modernization, and the new realities of a changing world order, require a fundamental restatement of SAC's missions and requirements.

A FOOT IN TWO WORLDS

Like the new National Military Strategy, I must deal with both enduring and new realities equally momentous. My considered conclusion is that SAC's mission is best described in terms of not one, but two Triads. The first is the long familiar Triad of Nuclear Deterrence, with its overlapping, mutually reinforcing capabilities embodied in the bomber, ICBM and the Navy's SLBM forces. The second is the inherent but heretofore less emphasized contribution of SAC's Conventional Warfighting Triad, comprising again the manned bomber, plus the tanker and strategic reconnaissance forces. In the emerging global security environment, sustaining and when necessary enhancing the strength of these twin Triads is my principal responsibility as the new CINCSAC.

THE NUCLEAR DETERRENT TRIAD

The new national military strategy upholds strategic nuclear deterrence as the cornerstone of the Nation's security. It recognizes that although the Cold War is over, the Soviet military establishment has yet to remove its overcoat. It remains largely insulated from the harsh economic climate affecting all other segments of Soviet life, in that modernization programs for strategic nuclear forces appear to continue unabated. Thus even at projected START I levels, these forces will constitute an undiminished threat in terms of their capacity to destroy the United States.

Conversely, despite this enduring reality, arms control prospects, Soviet unilateral initiatives, and the collateral benefits from other events in Europe, when considered as a whole, do allow for prudent reduction, reshaping, and reposturing of Strategic Air Command forces. However, this adaptation must take place within a coherent framework of national security strategy guidance, nuclear weapons policy, operational planning, arms control objectives, a balanced, supportable force structure, and, most importantly, modernization programs. I have examined each of these critical elements in great detail. I am persuaded that if the envisioned arms control agreement is achieved; and if the Soviet Union has indeed irrevocably abandoned its former hegemonic ideology; then the fiscal year 1992 President's budget and its underlying national strategy will fully sustain the Nuclear Deterrent Triad capabilities of Strategic Air Command and the objectives of the SIOP.

THE CONVENTIONAL WARFIGHTING TRIAD

Given the greatly expanded role I envision for SAC's conventional capabilities, especially its bomber force, it is essential that I underscore the relevant implications of strategic modernization programs from this perspective. First, it is obvious that both tankers and reconnaissance aircraft play a vital role in both strategic nuclear and conventional arenas. Therefore, I am keenly interested in sustaining their contribution, particularly with regard to the KC-135 reengining program, which has my strongest support.

However, the role of the bomber in future conventional warfare can not be overstated. Its unparalleled responsiveness, payload and flexibility, coupled with a capability to range the globe from the United States without en route or host nation support, make the bomber a unique and irreplaceable instrument of national power. For a variety of reasons, for the past 45 years, the inherent conventional role of the bomber has been called upon only episodically. The emphasis has been on its nuclear deterrent role. While that mission will continue to loom large for years to come, our new military strategy and the changing international security environment signal that it is clearly time to reinstitute the full conventional capacity of the Nation's bomber fleet, especially as its numbers shrink in the years ahead.

ARMS CONTROL IMPACTS

I strongly support START objectives as the most rational approach to bounding and balancing Soviet and U.S. strategic nuclear forces. Mutual, verifiable reductions of our respective arsenals are in the interest of all mankind. I fully concur with the negotiating emphasis on cuts in MIRVed systems in the quest for greater stability and survivability. With respect to U.S. modernization under START, my personal priority is on the bomber force, given its dual contribution to nuclear deterrence and conventional warfighting. I also view it as of overriding importance to continue to preclude constraints on the conventional capabilities of bombers under present and envisioned START negotiations. The bomber must be permitted to carry a full range of conventional munitions whatever arms control constraints may be placed on its nuclear role and payload.

FORCE STRUCTURE AND MODERNIZATION

The new global security environment today and the hope for lasting peace tomorrow are what can be described as a mighty river of change. Traditional views have been caught in the swift currents of sweeping reassessments. The river banks steer a course toward adjusted capability requirements and shrinking fiscal resources rather than of business as usual. The effect downstream comes as no surprise. Changing world events flow to new military strategies and inevitably compel us to revise and revalidate force structure requirements.

With this prelude, let me now address specific strategic programs. First, I will briefly recap the plans for U.S. strategic force structure under START, as contained in the fiscal year 1992 President's budget. As you will see, the effect downstream will include the elimination of some forces altogether. Where prudent, we have reduced or stretched out forces to provide a dam of sorts against the tide. Finally, we have ensured that alternate channels are available as a hedge should the river suddenly change direction. Next, I will outline my priorities according to my vision of SAC's future role, building on my foregoing comments about the primacy of the bomber force. Third, I will comment on the portent of Soviet instability on arms control and modernization. Finally, I will touch on the consequences of the strategic targeting review for future weapons choices.

BOMBER PROGRAMS

The long range bomber is crucial to the new U.S. national nuclear deterrent and conventional military strategy, with its acknowledgment of reduced forces and greater dependence on CONUS basing, even in the face of enduring global challenges to U.S. interests and commitments and continuing Soviet nuclear capability.

THE NUCLEAR DETERRENCE MISSION

With regard to its nuclear deterrence role, the single most important contribution of the bomber is to hedge against the failure or reduced effectiveness of the land and sea based missile forces, whether due to a technological catastrophe or breakthrough, or a direct Soviet attack. Bombers also provide a key characteristic sought by both arms control and modernization efforts—stability. Bombers do not threaten a first strike, but rather afford a means of controlled escalation, or measured deterrence response. Moreover, bombers uniquely tax Soviet defenses, through a combination of flexibility, survivability and adaptability not found in the other nuclear deterrent forces. Thus, a modernized bomber force is essential to preserve the logic of the nuclear deterrent Triad in the face of ongoing Soviet efforts to upgrade every element of their own strategic nuclear forces at a pace that far exceeds our own.

The B-2 is the key to the Nation's future strategic nuclear force posture. From every standpoint—the new national military strategy, START objectives and implications, upgrades in Soviet nuclear forces, crisis stability, and hedging against technological breakthrough—the B-2 is crucial. I am absolutely persuaded that it is the right system at the right time for the right mission. And what is that mission? It is multifaceted in keeping with the multi-role capability of the strategic bomber. Without the B-2, the capability of the bomber force to hedge the missile force becomes suspect, the Nuclear Deterrence Triad loses its synergy, hard target kill capability is reduced, and the perception of deterrence erodes. The B-2 is the system of choice as we enter an arms control era that emphasizes the contribution of individual weapons systems to enhancing stability. And finally, the B-2 will revolutionize the Conventional Warfighting Triad. It provides very long distance power projection, using the element of surprise and the ability to penetrate sophisticated or heavily defended targets while providing massed and accurate gravity and/or guided weapons, capitalizing on rapid availability, operating virtually independent of support aircraft, and sustaining such performance over a substantial period of time. Any one of these—preserving nuclear deterrence, supporting START stability, or revolutionary conventional warfighting—is mission enough to deploy the B-2. The only remaining issue from my warfighter's perspective is, will it perform as required, and to date the answer is a resounding, "yes."

The B-1 is currently on alert fulfilling its nuclear deterrence mission. I have no doubt it can do that job effectively. Even with its acknowledged ECM, fan blade and anti-icing problems, it is still the best operational bomber in the world today, especially when mated with a highly skilled SAC crew flying an exquisitely planned route designed to minimize exposure to an air defense system which has very likely been degraded by prior missile strikes.

I do not mean to overly minimize these three problems. They are real. They impose limitations. They are also fixable, and in my view, they must be fixed. The B-1B is integral to a smaller but more effective bomber force for the 1990s and beyond. Yes, we've been on a maturation marathon with this airplane—but, we're down to 385 yards to go. This is no time to abandon the course.

The venerable B-52 is a classic example of the versatility and adaptability of a large, long-range manned aircraft. It is a tribute to American technology and doctrinal flexibility. Consequently, it can and will continue to play a key nuclear deterrent role, albeit from a posture that recognizes its growing vulnerability to Soviet air defenses. However, due to fiscal realities and the age of the engines and airframe, the ALCM carrying B-52G will be retired at an accelerated rate.

THE CONVENTIONAL WARFIGHTING MISSION

Desert Shield and Desert Storm have highlighted the extraordinary contributions of the strategic bomber with a display that finally fulfilled the vision and convictions of airmen going back to Douhet, Mitchell, Arnold, Spaatz and LeMay. Bombers reached their targets from bases that were relatively close and from locations thousands of miles away. They carried weapons ranging from World War II gravity bombs to the most advanced munitions. They attacked a wide variety of targets, from fixed facilities to the Republican Guard in the field. They helped track down and attack SCUD launchers. Ultimately, they dropped 30 percent of the tonnage rained on Iraq. Bomber crews were frequently given new targets en route, and occasionally called off when targets became confused on a fluid battlefield. In short, every quality of the manned bomber came into play.

SAC tankers also were busy, offloading 1.2 billion pounds of fuel, serving as true force multipliers in extending the range of other aircraft. Likewise, SAC reconnaissance aircraft provided around-the-clock coverage that was instrumental to General Schwarzkopf in what he called "shaping the battlefield."

The new strategy anticipated this lesson of Desert Storm when it called for conventional forces able to rapidly respond to a time-sensitive crisis providing long-range precision delivery before establishment of bases, before achieving air superiority and before air defenses are neutralized. I do not intend that this lesson be relearned on my watch as CINCSAC. The Twin Triad is here to stay. The dual-capable bomber is not only back, it is manifestly the weapon of choice for a strategy and a command that must bridge the old and the new world order.

Providing the conventional capability which enables our strategic bombers to fulfill their dual role presents a particular challenge. When we design and then procure a strategic bomber, we get the basic airframe, the controls, displays, radars, computers and avionics for navigation, and a weapons control and delivery system, and enormous growth potential. Maturing the nuclear deterrent mission capabilities of a long-range bomber is relatively simple because the weapons and delivery tactics essentially are constant.

By contrast, the number and variety of conventional weapons, ranging in type and complexity from gravity iron bombs to standoff precision guided munitions, makes the development of a bomber's conventional capability more demanding. Like peripherals to a computer, each conventional munition must be carefully integrated with the bombers' systems. For conventional weapons, this means integrating the munition to the bomber with suitable suspension and release equipment; linking the munition to the bomber navigation and sensor suites with appropriate software; and, testing to determine how the weapon will behave when employed in the different aerodynamic environment of the bomber.

Though it is possible to anticipate some of these conventional munition requirements in the basic design of the aircraft, the extremely long life cycle of a strategic bomber means this integration process must be regularly repeated. We have done much to simplify the process through standardization, interchangeability of components, and designing sufficient space into new aircraft to allow easy accommodation of the integrating equipment. As a conventional warfighting weapon system, the strategic bomber's ability to grow and adapt to new technology makes it a particularly wise investment, unique among strategic weapons systems.

We are in the process of deciding which conventional weapons will be integrated with the B-2. I can assure you that the Air Force is committed to integrating both precision guided and gravity weapons to this remarkable aircraft.

ICBM FORCES

Nowhere is the downstream effect of change I noted earlier more apparent than in our ICBM force: some forces are eliminated completely—a number one priority yesterday becomes a hedge for tomorrow. I believe the ICBM force can and will grow smaller in accordance with the new national military strategy and START I objectives. Nonetheless, selective upgrades and modernization hedges are essential until the long term thrust of Soviet programs is better understood and follow-on START objectives are mapped out with the Soviet leadership.

The MMII force will retire by the end of fiscal year 1997. The timing of the phase-out is keyed to the pace and prospects of an incipient START Treaty.

A fully capable MMIII force remains the centerpiece of the ICBM force. Funding for the MM Integrated Life Extension Program, in order to maintain launch and launch control facilities to their design specifications, is essential.

Plans to rebase 50 Peacekeepers in the rail garrison mode have been put on hold. This is a fiscally prudent step, notwithstanding the continuing Soviet move to greater mobile basing of their ICBM force—so long as the modernization programs outlined in the fiscal year 1992 President's budget proceed apace. The logic of deterrence does not require perfectly symmetrical force postures, but it does require adequate capability to execute national strategy. A modernized nuclear deterrent Triad will sustain that strategy for the foreseeable future without a mobile ICBM force.

As I have outlined, our ICBMs will continue to provide deterrence in a Triad context as we proceed with modernization and arms control. If needed, ICBM mobility is adequately hedged for the future. In my view, bomber modernization is a far more compelling need, especially given its multi-role capability.

The Small ICBM is, in my view, the best option to hedge against long term requirements to replace the MMIII and/or to introduce mobility into the ICBM leg of the nuclear deterrent Triad.

AIR LAUNCHED BOMBER MISSILES

The Advanced Cruise Missile makes an enormous contribution to bomber survivability and effectiveness. It has my strongest support.

The Short Range Attack Missile II program preserves a key aspect of bomber flexibility in the nuclear penetration role. Funding for continued development and testing should be supported.

HAVE NAP, a conventional standoff missile with pinpoint accuracy is an ideal weapon for the dual capable bomber. It is a forerunner of the type of PGM that is absolutely essential to sustain the irreplaceable role of the manned bomber to conventional warfighting well into the next century.

COMMAND, CONTROL AND COMMUNICATIONS (C3)

Desert Storm dramatically underscored the need for C3 to operate, control, and manage forces from takeoff to target to recovery. The MILSTAR program provides just such capabilities. Restructured to better support conventional operations, MILSTAR has applications on all SAC aircraft: from bombing to reconnaissance. Thus, the restructured MILSTAR program is a perfect fit to SAC's Twin Triad of Nuclear Deterrence and Conventional Warfighting. Completing the Groundwave Emergency Network (GWEN) will ensure I have the ability to communicate with SAC forces even while under attack. Once the National Academy of Sciences completes its review, your help is essential to quickly release the funds to continue land acquisition and relay node construction.

NUCLEAR WEAPONS INFRASTRUCTURE

To meet future weapons requirements, albeit at lower overall levels, and to implement the Drell Panel's proposals on nuclear weapons safety, the United States needs a healthy, viable, and safe nuclear weapons production complex. Especially critical are the Rocky Flats Plant and the Savannah River site. Without these production facilities, it may be impossible for the U.S. to implement its planned nuclear modernization and recommended nuclear safety programs.

GOLDWATER-NICHOLS DEFENSE REORGANIZATION ACT

The 1986 Defense Reorganization Act can take important credit for the enormous success of Operations Desert Shield and Storm. The increased authority of the supported CINC left no question about who was in charge. From the SAC perspective, the impact of the 1986 act was most apparent in the ease with which CINCSAC, as a supporting CINC, provided bombers, tankers and reconnaissance assets, to include operational control of the bombers, to the theater commander. The "chopping" of these bomber assets to a theater commander was precedent setting for SAC. Under this arrangement, some 70 bombers flew 1,600 sorties under the operational control of the theater commander. Further, SAC reconnaissance aircraft flew 1,200 sorties and helped provide 24 hour a day coverage of the Gulf area. SAC tankers supported both CINCCENT and CINCTRANS, offloading a billion pounds of fuel. This extraordinary effort was provided without a hitch related to operational control of the aircraft.

PRIORITIES

Finally, let me say a few words about my priorities. First and foremost, my top priority is people—130,000 of them. As I watched the first of 16,000 SAC people return from the Gulf, it was a pointed reminder that ultimately, to quote General George Patton, "wars are won by men, not machines." In this day and age, I need only update General Patton's words and say, men and women.

My second priority is readiness, because my mission never stops. Nuclear deterrence is a 24-hour-a-day, 365 days-a-year mission. And, conventional power projection and/or warfare is something I might be called on to do at any time. The vigilance of SAC must not diminish one iota.

Modernization is my third priority because it is the key to sustaining the capabilities that underwrite the Twin Triad of nuclear deterrence and conventional warfighting.

Last, but in some respects most importantly, is the development of an intelligent and efficient Single Integrated Operational Plan. This task, to develop a target list on which nuclear weapons may be placed in wartime, is the most sobering of all my responsibilities. Secretary Cheney and General Powell have already taken a close look at our strategic targeting policy and associated war plans, and made a number of significant changes that reflect the evolving world situation and establish tighter linkage between policy guidance and employment planning. I was intimately involved with the review as the J-5. Now as Director, Joint Strategic Target Planning, I have conveyed to my staff the conviction that I intend to continue reviewing the entire process to ensure that every weapon and every target is fully in keeping with the guidance from higher authority and that it passes my logic check with regard to each target and each weapon. Such a check must be done to ensure that the SIOP not only meets guidance from the President, Secretary of Defense, and Chairman, JCS, but also that it is consistent with arms control objectives and proposed constraints while also being consistent with force structure and modernization programs. In that regard, let me stress that the SIOP is not driving U.S. nuclear force requirements. Rather, it is one factor, among many, which collectively determine the approximate size and posture of our strategic nuclear arsenal.

In conclusion, the fiscal year 1992 Presidential budget for the Strategic Air Command is based on vital national interests, the changing landmarks that identify and threaten those interests, a new strategy that accounts for enduring and emerging realities, and the realities of a declining defense budget. I believe that the most important priorities of the Strategic Air Command, priorities essential to provide the Twin Triad of nuclear deterrence and conventional capabilities, have been met in the fiscal year 1992 budget request.

Senator EXON. General Butler, thank you very much.

We will follow the usual procedure now with a round of questioning. I would ask the timekeeper to keep time and advise me when the Senator's time is up so that we can move ahead. I know there will be a series of questions by members of the Armed Services Committee.

First, let me say to you, gentlemen, that the week before last, I was in the Soviet Union with four of my colleagues. I wish that every American would have had the opportunity to listen to the Soviets as I listened to them to see what concerns me a great deal with regard to stability, with what I think is a disintegration of the Soviet Union economically.

It might follow in some people's minds that, therefore, there is going to be an immediate disintegration of the Soviet military. I think we follow such a course of reasoning in total folly.

I am very much worried about the instability there. I am not sure how long Mr. Gorbachev can last. I was there the day of the largest outpouring against Mr. Gorbachev, and I guess against a Communist leader since communism took over in that country.

The day we were there was not only the Embassy fire, but that evening, a large demonstration took place. That day we were with Mr. Shevardnadze, and he told us there were more Soviet troops in Moscow that day than any day since the end of World War II.

I feel that in the Soviet Union today there is the chance for a total breakdown, a chance for chaos, and the only good part of all of this is that they do have I think a rather highly trained military that probably will be brought to bear in some harsh ways to restore order if order further breaks down.

Harkening back to what I said a moment ago, some people might think this is good news for America. I am not sure it is. I am not predicting that, as a result of this, there is going to be a significant escalation back to a Cold War concept. But I am convinced, after listening to the people that I talked to in the Soviet Union, especially members of their armed services committee, who clearly indicated, without saying so, that they knew they had somewhat of an upper hand on us with their SS–24 and SS–25, which, of course, is, the former, their rail mobile, and the latter, their road mobile missiles. I am convinced that under the hardships that they are going through, they are going to concentrate on modernization of their strategic forces like we have never seen before. Or, another way of putting that is they know from their perspective or they think from their perspective that a strong nuclear deterrent is probably the best way, and the cheapest way, to protect their national interest.

With that in mind, then, I want to go into some questions about where we are going, what we are doing, how you see it. I listened very carefully to your opening statements and to that of Senator Thurmond, and I think, basically, we all have some concerns that maybe the people of the United States do not fully understand just what is going on over there.

Let's go, if I might, General Butler, to you first.

Last week or the week before, there were a number of newspaper articles that addressed the matter of a reduction in the number of targets in the Single Integrated Operational Plan, called the SIOP. The range of the reductions were reported from 1,000 to 2,000, according to some sources, and they included targets in both Eastern Europe and the Soviet Union.

Could you describe for the committee in as much detail as you can in this open session the nature of the changes in targeting so that we might get a better concept of what the military leadership in the United States is thinking in this area.

General BUTLER. Obviously what I can say in open session is somewhat limited.

With respect to the article, I will not speak to any of the details because in open session I can neither confirm nor deny specific numbers. On the other hand, the general thrust of the article was correct in that there was review done of the SIOP. It was an historic review, unprecedented in its sweep.

I was the co-chairman of that review in my previous capacity as the Director of Strategic Plans and Policy on the Joint Staff, and it, is now my responsibility to implement the results of the review in my capacity as the Director of the Strategic Target Planning Staff.

I believe I can say this much appropriately in open session.

Number one, I thought that the review was very appropriate. It was directed by the Secretary of Defense. It allowed us to take a long, hard look at the SIOP in a changing strategic era. It actually came on the heels of improved methods of target analysis that had already been implemented by the Joint Strategic Target Planning Staff at Offutt, at SAC Headquarters.

And so, what the review really accomplished was to bring together improved targeting methodologies, as well as a new look at the target set in the aftermath of the breakup of the Warsaw Pact and the changed relationships between the United States and the Soviet Union.

The upshot of it was that I believe we have brought into greater consonance than ever before relationships among the guidance policy that I would get as CINCSAC from the President, from the Secretary of Defense and from the Joint Chiefs of Staff, the structure of the SIOP and the types of targets that we include in that document, the force structure that we have presently and the forces that are planned.

So I believe that what we have achieved was very useful. It helps enormously in terms of keeping a high degree of harmony between forces, policy, and future plans, and I am very satisfied with its outcome, Mr. Chairman.

If you would like more detail than that, I would have to ask for a closed session.

Senator EXON. I understand that. Thank you for responding as best you can.

Let me push you just a little bit more to see if you can give us maybe something more in public.

Were any of the reductions in the target base made in the category called "war supporting industries?" What is the nature of the targets so deleted?

Can you answer any of that in open session?

General BUTLER. To the extent that there were any changes in that category, Mr. Chairman, it was nothing more than the product of improved targeting techniques and judgments that grow out of—I know this sounds a little circuitous, but I have to answer it this way—it grew out of improved analysis with respect to how networks operate and finding critical points with the networks and targeting those critical points which allowed us some saving with regard to various other potential targets within the same sort of critical subsystem.

Again, I would ask if you would allow me to stop there.

Senator EXON. I understand. I think that is very appropriate. Thank you, General Butler. My time is up. Senator Thurmond.

Senator THURMOND. General Kutyna, it seems to me that one of the lessons learned in the Persian Gulf war is that the United States had an enormous advantage over Iraq with its overhead space assets, navigation, communications, surveillance, reconnaissance, and meteorological abilities, and so forth.

If Iraq had similar, or even just reconnaissance, capabilities, it could have affected our operations and possibly increased the number of U.S. casualties.

Moreover, Admiral Brooks recently testified to Congress that such satellite capability may be available to nearly 20 nations by the turn of the century.

Does this not justify an urgent need for an anti-satellite capability to enhance or insure the survivability of our forces, and including contingency and projection forces?

General KUTYNA. Senator Thurmond, that is exactly correct. It was a tremendous advantage for the U.S. forces in our ability to surveil, navigate, warn, and communicate across the field of battle. That advantage was not available to Saddam Hussein. If it had been, many of the maneuvers that we accomplished so successfully would not have been possible.

For example, the famous "Hail Mary Movement" around the Western Flank went totally undetected because Saddam Hussein had neither the aerial reconnaissance or the space-based assets to see that maneuver. In a future war with a future enemy who may have that capability, we would like to be able to neutralize that capability. To that extent, an anti-satellite system would be most appropriate to have in our inventory.

Senator THURMOND. General Kutyna, on March 7, 1990, your predecessor, General Piotrowski, testified before a similar subcommittee hearing that, and I quote: "In the force application arena, my number one priority has long been the deployment of a militarily effective ballistic missile defense. If deployed, U.S. Space Command can operate SDI Phase I ballistic missile architecture to meet or exceed JCS validated requirements.

In your prepared statement, you do not have a similar category called "Force application," but you seem to support ballistic missile defenses. Do you rate ballistic missile defenses as your number one force application program or do you think Space Command should operate a deployed missile defense system?

General **Kutyna**. Force application is one of four mission areas that I have, to include force enhancement, space support and space control. In concert with General Piotrowski's statement, in the force application mission area, the strategic defense, the level I of SDI, is still my number one priority.

Senator **Thurmond**. General Kutyna, if the United States intends to deploy serious theater missile defenses without contingency and projection forces, how important is a more advanced space-based early warning sensor system, such as the advanced warning system?

Moreover, is on-board processing necessary to have timely cuing and battle management to our theater missile defenses overseas, particularly against short flight-time systems, such as the SS-21.

General **Kutyna**. Our current space forces worked exceptionally well in the Iraq war, but it was an optimum environment. We worked right on the edge of our capability and used extraordinary measures by our forces at all levels to make those systems work.

Those systems will not be satisfactory in a future conflict that strays from the optimum conditions we had in this one.

So, very clearly—and we would have to go to closed session for the rationale for this—very clearly, we need a follow-on early warning system.

As to the characteristics of that system, the one that's on the drawing boards today will satisfy my initial needs. It has the capability to evolve to satisfy CINCSPACE's full capabilities in the probability of detection, in the timeliness of the detection, in the location of the launch points, and many other areas that are very important to get this warning to our troops.

As to on-board processing, that is, again, a follow-on enhancement that will be necessary for this space-based missile warning system. At this particular point, it is one of my lower priorities for that system and does not necessarily have to be on the initial model of that satellite. The reason was demonstrated during the recent war. We were able, through our very competent and very complete communications systems, to provide that warning directly from Cheyenne Mountain headquarters in Colorado at the speed of light to our troops in the field.

In a future conflict, when the budget allows, the on-board processing could be a useful capability—on-board processing could give that warning directly to our troops to look at. But, it may not be the optimum solution at this time, sir.

Senator **Thurmond**. General Kutyna, I understand that the follow-on system to the Defense Support Program is undergoing final review. Can you tell us how the follow-on program or advance warning system will be structured? Does this restructured program meet CINCSPACE and JCS requirements, particularly those revised requirements formulated during the 1990 August review of the AWS program?

General KUTYNA. Yes sir. I cannot give you the details of the performance of the system because they are classified and we will have to do it in closed session; but, it will satisfy my minimum requirements. I have seen those requirements, discussed them with the managers of the program. And, again, in the areas of probability of detection, the azimuth of the launches, the area from which the missile launched, and all the other parameters, they are well advanced beyond the current system. This will satisfy those initial requirements that we have, and, most importantly, will have the capability to grow to satisfy the full system requirements in the future and in follow-on modifications to that satellite.

Senator THURMOND. I am informed my time is up, Mr. Chairman. Thank you.

Senator EXON. Thank you, Senator Thurmond. Senator Levin.

Senator LEVIN. Thank you, Mr. Chairman.

General Butler, in your prepared testimony, you state that a fully capable Minuteman III force remains the centerpiece of the ICBM force and that funding for the Minuteman Integrated Life Extension Program, in order to maintain launch and launch control facilities to their design specifications, is essential. What is the estimated cost of that modernization plan?

General BUTLER. I will have to give you that for the record, Senator. I don't have it off the top of my head.

[The information follows:]

MINUTEMAN INTEGRATED LIFE EXTENSION PROGRAM

The Minuteman Integrated Life Extension Program costs approximately $50 million per year.

Senator LEVIN. Is that a continuation of a previous program?

General BUTLER. It's a long-standing program which focuses on repairing the effects of aging and resolving deficiencies detected during hardness surveillance inspections.

Senator LEVIN. My information is that modernization program costs about $2.7 billion. Does that sound in the ballpark?

General BUTLER. I will take that one, too, sir.

Senator LEVIN. All right.

[The information follows:]

MINUTEMAN INTEGRATED LIFE EXTENSION PROGRAM

The Minuteman Integrated Life Extension Program costs approximately $50 million per year.

Senator LEVIN. If the Air Force proceeds with that planned Minuteman III upgrade, including washing out stages 1 and 2, remanufacturing stage 3, upgrading the guidance set, do you believe that those modernized ICBM's will remain the centerpiece of the ICBM force for a decade or so, at least?

General BUTLER. I see the thrust of your question. We were just talking about apples and oranges. I understand your oranges now.

If we want to sustain—and obviously we do—the Minuteman III well into the next century, it is going to require first and second stage wash-out; it is going to require third stage remanufacture; it is in the 1997 timeframe, going to require a guidance control update.

As I remember the figures, the wash-out and remanufacture is about $1.5 billion. The guidance update will cost between $1.4 to $2.7 billion, depending on what approach we use. Stage washout remanufacture and guidance, however, are not the only areas that need to be addressed. Supportability and maintainability upgrades are also required in the launch control centers and support equipment areas. Total cost to bring Minuteman III into the next century—$4.0 to $5.3 billion.

Senator Levin. In your testimony you indicate that deterrence does not require perfectly symmetrical force postures and that a modernized nuclear deterrent triad will sustain our deterrent strategy for the foreseeable future without a mobile ICBM force. Is it your judgment that we will have adequate deterrence in our triad without a commitment at this time to a mobile ICBM force?

General Butler. With the important caveat that the START Treaty, as presently envisioned, continues on track, that there are no surprises in the Soviet strategic nuclear modernization program, and that, on the other side of the coin, there are no surprises in the sustainability of our own forces, no unpleasant technological breakdowns in missile reliability or what have you.

With those caveats, yes, that is my belief.

Senator Levin. Now, as I understand it, you are planning to take one trial of the MX rail based——

General Butler. That is correct.

Senator Levin [continuing]. And do R&D on the Midgetman. In which mode is that, by the way—in the silo mode or the mobile mode on Midgetman?

General Butler. It is a proof of concept for the missile itself, and then we maintain the option for either a silo or a hard mobile basing option.

Senator Levin. So you are not going to be seeking R&D money for either the silo or the mobile option?

General Butler. We do want to protect the option for the mobile launcher.

Senator Levin. All right. So you will be doing R&D on the mobile launch option?

General Butler. That is my understanding, sir.

Senator Levin. But you will be keeping that under current plans in R&D.

General Butler. Looking toward, trying to protect a 1997 deployment decision. But that decision will be revisited year to year.

Senator Levin. And keeping open a number of options for 1997, I take it?

General Butler. That's correct.

Senator Levin. Is one of those options a continuation of the Minuteman III program as the centerpiece of our plan?

General Butler. That's not an option. That is the program.

Senator Levin. But would the continuation of that option be one of the options that we have?

General Butler. How far we want to extend the life of the Minuteman III will depend on judgments about the necessity to go to mobility, depending on how the START agreement unfolds and, as a correlation to that, how the Soviet strategic force itself unfolds.

Senator **Levin**. And, given your caveats, we can safely delay that decision until 1997?

General **Butler**. That's correct.

Senator **Levin**. In your testimony, General Kutyna, you indicated that the GPALS program is an evolutionary step toward a more complete strategic defense system. The President, in his State of the Union Address in January said that the SDI program will be refocused on providing protection from limited ballistic missile strikes.

So the President's description of the GPALS program was a refocusing of the SDI program. He did not describe it as a step toward Phase I, but a refocusing of the SDI program.

Is the SDI program going to be refocused so that there will be a requirement set forth for GPALS?

General **Kutyna**. I guess you would have to ask Ambassador Cooper to give you an answer to that question. But as far as the Joint Chiefs see it, the requirement for a Phase I SDI strategic program still exists. As long as the Soviets have the capability to destroy this Nation in a few minutes, as General Butler has outlined, with more than 10,000 nuclear warheads aimed in this direction, we see no recourse but to eventually have the requirement for a Phase I system.

Senator **Levin**. You say eventually a requirement. There is currently a requirement.

General **Kutyna**. There is currently a requirement.

Senator **Levin**. Is there a requirement for GPALS right now?

General **Kutyna**. There is a requirement for SDI Phase I. There is also a requirement for GPALS that I think has been stated, and the need probably has been illustrated by Saddam Hussein in what he has done in Iraq.

Senator **Levin**. I am using "requirement" in the technical sense. Is there a requirement that the Joint Chiefs, the JCS, have set forth for the GPALS?

General **Kutyna**. I do not have a JROC or a specific requirement for GPALS. And so, GPALS would be a step on the way to SDI, Phase I.

Senator **Levin**. Thank you. My time is up.

Senator **Exon**. Thank you very much, Senator Levin. Next is Senator Coats. But I see that Senator Coats has left, though I am sure he will be back. Senator Smith.

Senator **Smith**. Trent, you were in here ahead of me. Why don't you go ahead.

Senator **Lott**. That's all right. I would defer to you. [Pause.] You go ahead. Really.

Senator **Levin**. Senator Wirth will take his turn, if you don't want one.

Senator **Smith**. Oh, no. That's all right.

Senator **Exon**. Senator, we follow the early-bird rule. If you would care to waive it, that's all right with me.

Senator **Smith**. No. I thought Trent was here ahead me.

Senator **Exon**. I don't believe so, not according to our record.

Senator **Lott**. I believe he was here first. But, you know, I know how these House members are. When we come over here, we're not used to being treated this way.

Senator **Exon**. Oh, you're not used to courtesy?

Senator **Lott**. That's right. [Laughter.]

Senator **Lott**. And we appreciate it, too. [Laughter.]

Senator **Exon**. Senator Smith, as a courtesy, you are recognized.

Senator **Smith**. Thank you, Mr. Chairman.

In looking at public statements on the record regarding the triad, you, General Butler, indicated that you had some concern over Soviet upgrades to the SS-24s and SS-25s. It seems to me that our budget request does not realistically address what appears to be an increased Soviet strategic threat. The public comments are all documented, but in some you have people who—and I have the names of the people who said them—have stated: START will only have a minor impact on Soviet capabilities to hold key North American and Eurasian targets at risk. Another: The air leg of the Soviet triad will exhibit significant growth in weapons carrying capability, particularly long-range cruise missiles. And: Under START, the Soviets will have considerably fewer strategic subs, but nearly all will carry long-range, hard target capable SLBM's. The rail and silo SS-24 deployment program has probably ended, but road mobile deployments continue apace. Also: At least two ICBM follow-ons, SS-24s and SS-25s are currently in deployment.

I hear those statements, I see those statements, and then I see that we are cutting back. In fact we are shutting down the only hot ICBM production line that we have.

What effect will this have? Are you concerned about this? I am sure you are concerned about it.

I certainly am. When you look at the problems we have shutting down the ICBM hot line; no follow-on proposal; nothing here at this time ready to go with a mobile missile; the rail isn't ready yet; the Midgetman is not here. I am very concerned. In spite of all the problems in the Soviet Union, which the Chairman so eloquently stated, I still see this great Soviet emphasis on the strategic nuclear deterrent.

I am concerned about it and I would like you to respond to those points, if you would.

General **Butler**. I would be happy to.

First of all, let me underscore that my requirement in the tasking that I receive in nuclear weapons guidance is to be able to mount a devastating retaliatory strike on the Soviet Union in the event that they should initiate war upon us. And so, my first concern is whether or not our own strategic nuclear offensive systems are adequate to cover the target base that I devise based on the guidance that I am given.

And so, the judgment that you see reflected in my statement and in the fiscal year 1992 President's budget is that the forces which we will have at the end of the programming and budgeting period—500 Minutemen; 50 Peacekeepers; 18 Trident boats; something over 200 bombers; and the associated weaponry—is adequate to cover the target set under any condition of war initiation.

What gives us pause about the sweep, the scope, the pace of Soviet strategic modernization programs, particularly in the face of ours, which are modest by comparison, is that this raises questions about the long-term balance of capabilities, the prospects for continued arms control negotiations.

So my answer to your question is, one, I am confident that, with the forces that are encompassed in this budget submit, I can continue to do my job of strategic nuclear retaliation on a given target set. With respect to the investment that the Soviets are making in their own strategic nuclear forces, yes, I am concerned about that, and for two reasons.

One is it just does not make any economic sense. Second is if it doesn't make economic sense, what is the logic behind it.

Senator SMITH. Then how long can you defer action? With the things that are being built into our budget, with the points that I mentioned—specifically, our own problem, the B-2 is not here, we're still not where we should be with MX and Midgetman—how long can we go without addressing this? How many years?

General BUTLER. That is a very tough question. It is problematic. It is hypothetical. But it is also very cogent.

My judgment is that for the 6-year period encompassed by this budget, which will also encompass much of my tenure as CINCSAC, we can deal with it. Our forces will be adequate.

However, I am concerned about modernization within our own forces. You heard that my number one priority is the modernization of the bomber force, because I think the bomber plays an absolutely vital role in both nuclear deterrence in that triad and in conventional warfighting.

Senator SMITH. But if these lines get shut down, you can't turn them on and off again like a faucet.

General BUTLER. Right.

Senator SMITH. If we don't keep up with the R&D and we shut down the B-2 line, or we shut down our ICBM line, whichever it happens to be, whether it is Midgetman or MX, if 6 years from now you come back and you say hey, they are ahead of us, we are in trouble, now we have to start up again, then we're back where we were in 1978.

General BUTLER. We clearly are in a hedging strategy with regard to our modernization program, Senator.

Senator SMITH. Pardon me? We are what?

General BUTLER. We are in a hedging position with regard to the option of Peacekeeper and a rail mobile, or with regard to the procurement of the Small ICBM.

So that is why those programs are options that are kept open for about the 1997 timeframe and just beyond.

It says that we have confidence in our current systems. But it also means that we must protect those options for the out-years.

Senator SMITH. My time is up. Thank you, Mr. Chairman.

Senator EXON. Thank you very much, Senator Smith. Senator Wirth is next.

Senator WIRTH. Thank you very much, Mr. Chairman.

General Kutyna, welcome. It's nice to have you here. We are pleased to have your help and support. We appreciate all the good work you do in Colorado Springs and elsewhere.

We have been talking with you and with the Air Force about future plans for the Space Systems Command. In various iter-ations, it has been suggested, that they were going to close the Los Angeles operation.

I know that that has not been on the most recent list, but it continues to appear to be part of the debate. Obviously, we are very interested, as we have talked to you and to others about any changes, in potentially moving all or part of that to Colorado Springs.

One of the theoretical bases for doing that which I wanted you to comment on was the need to see if we can better coordinate between the developers and the users, rather than to put all the development group together and to have the users elsewhere, that we ought to think of taking the development capability and putting that closer to or linked with the user community.

I know that that is an issue that you are all looking at. I was wondering if you might comment on your perspective on that for the purposes of the record we are making here today.

General KUTYNA. Thank you, Senator Wirth. I appreciate the question.

Whether or not Space Systems Division in Los Angeles would be on a future base closure list is something that we certainly cannot discuss here and will not determine.

But, the logic of having a developer and a logistician and an operator collocated is just irrefutable. The synergy that comes from operating a system cradle to grave, with the very close coordination that Space needs, would be greatly enhanced by having those various entities close together.

Space Systems, in the very beginning, were operated by a single entity, cradle to grave. Space Systems Division wrote the requirements, they designed the system, they launched the system, they maintained the system, and then they retired the system.

One of the great reasons for success of our space systems is the closeness between all those facets of the Space Systems operation.

It was, however, an incestuous relationship in that one guy was in charge of all aspects of it. The normal balancing features that you get from a user and a developer, where the developer wants to go too far in making things better and the user wants to accept something that is not quite as good as it should be, was a flaw of that system.

Now we have separated the commands. You have a separate acquisition command, you have a separate operating command, you have a separate logistics command. To have those commands collocated in one area, where they could talk to each other every day and not have that incestuous relationship where they all work for the same boss, I think would be a wonderful opportunity to occur in space systems.

We already have the operators in Colorado, in the Air Force Space Command, the Army Space Command, the Unified Space Command. The only one that is not there is the Naval Space Command. We have the logistician in the form of a program called Pacer Frontier. He is located in Colorado Springs. So those two facets are together.

If Space Systems Division were to close and look for another place to move, getting close to the user would really enhance the operation of the whole system.

You cannot do that in airplanes, although we might want to, because airplanes are scattered all around the world. But you have in Colorado Springs the center of gravity of all space systems, military space systems. So you have the opportunity to do that. It is something that I would strongly urge you to look at in the future.

Senator WIRTH. Thank you very much. We are very proud of that command there and the extraordinary job that they do. It seems to us that it would be a real saving to the taxpayer as well, if we can collocate those functions. We all obviously make economic arguments and budget arguments. But it seems to me that substantively there is a reason for co-location. I know that, historically, there has been a concern that if it's one command, maybe it becomes dysfunctional, maybe you get internal conflicts of interest. I mean here not a conflict of interest on the outside, but that the commands get too cozy, one with the other.

What you are suggesting now is maintaining the separate commands, but collocating them to solve the problem that had been of earlier concern, some 20 years or so ago.

General KUTYNA. Yes. They are broken up into three separate commands now, and development and operations won't join again. That is great. That keeps them separate.

As long as they work for separate bosses, there will not be that problem in the relationship. But the opportunity to cooperate will be great.

Senator WIRTH. Thank you very much, General Kutyna.

General Butler, you also wear the hat of the head of the Joint Strategic Targeting Planning Staff.

General BUTLER. That's correct.

Senator WIRTH. One of the concerns that we also have in Colorado relates to the reopening of the Rocky Flats Nuclear Weapons Plant. You are familiar with that. That has been out there gnawing on all of us dealing with this issue.

There is alleged to be a sense of urgency to open up the Rocky Flats Nuclear Weapons Plant production because of the need to further produce W-88 warheads. That is about the only rationale that is given. I think that is the only one that is there for rushing to reopen Rocky Flats.

There may be others, but I have not heard them.

So, therefore, we have to understand what the urgency is to increase the production or to go back into production with W-88s now, given the current world situation and given the great capacity that we already have with various systems.

Could you give us your view on the W-88s and why it is that you believe that we have to go back into production at Rocky Flats, why we need to produce more W-88s, given the current world situation.

Mind you, this is a question that those of us representing that area get asked all the time by our citizens, who say look, the Soviet Union is falling apart. They are effectively imploding. Why do we have to do this, given all of the other capabilities that we currently have. Let's slow down here, let's develop the capability elsewhere, and then, if we need it down the line, let's do it. But there does not seem to be any sense of urgency now.

General **Butler**. I think the answer that I would give to your constituents, Senator, is that you can take out the W-88 and substitute almost any other strategic modernization program and say why don't we slow down here, given what we are doing elsewhere.

Well, the fact is, as has been noted, we are slowing down. We are cutting back. We are taking the Minuteman II missile out of the inventory. We have stopped Trident production at 18 boats.

We are not going to proceed with Peacekeeper rail garrison, and we have an option, a strategy, for the new Small ICBM.

So we have made a number of decisions which impact on the scope and the pace of our modernization programs.

With respect to the W-88 and Trident, the relationship I think is pretty direct. We are producing Trident boats. Our plans of longstanding have been to equip them with the D-5 missile, with the W-88. Our ability to do that is being directly impacted, right now, by the shut-down of Rocky Flats.

Senator **Wirth**. But there are now a variety of other warheads that are coming off of submarines being retired that could be put onto the Tridents. Is that not the case?

General **Butler**. Yes, of course that is the case. You could use other warheads.

But part of our ability to—again, I am trying to be cautious—part of our ability to modify the SIOP and the way that we target is contingent upon more efficient weapons, which the W-88 is. It has, hard target characteristics, as you know.

And so, it is a pacing factor in my ability to produce a more efficient and effective SIOP.

I do not think I should say any more than that in this hearing, not only to outfit the boats, as was planned, but because the warhead brings us a very important capability.

Senator **Wirth**. I see that my time has expired.

Senator **Exon**. Yes, your time has expired, Senator.

Senator **Wirth**. I will send you a letter, if I might, trying to line out what kinds of questions there are in terms of numbers and replaceability, and maybe we can do something publicly for the record, without getting into classified issues.

General **Butler**. I would be happy to do that for you, Senator.

[The information follows:]

W-88 Warhead

A reply will be submitted upon receipt of your letter.

Senator **Wirth**. Thank you, Mr. Chairman. I appreciate it.

Senator **Exon**. Thank you, Senator Wirth. Senator Lott is next, unless you wish to yield to your senior colleague.

Senator **Lott**. I don't believe so, Mr. Chairman, though thank you very much. [Laughter.]

I have been here for 2 years and 4 months and I've learned not to do that. [Laughter.]

I am so inclined to want to make statements based on what I have heard and the questions that we are asking. But I will not do that because I want to ask you some questions.

Obviously, what the Soviets are doing defies logic. But the fact is they are still doing it.

I think we are making mistake after mistake after mistake in the decisions we are making to cut back, limit, control or restrict, based on what we expect them to maybe do in the future.

That will do as a statement for now, I guess. I have a couple of questions for each of you.

First, General Butler, you wrote the reorganization plan for SAC and TAC while at JCS. Now you are in command of SAC and enjoy the opportunity to integrate your plan into SAC. What is the status of that reorganization effort? Do you think Congress would need to approve any of this kind of reorganization?

General BUTLER. Let me be quite clear. There are some things to which I am quite happy to plead guilty, and others that I would protest.

I did two things in my previous capacity. First, I rewrote the National Military Strategy. Among other things, that strategy included a base force, and that base force is the subject of discussion here this afternoon. Was it wise to cut back the Minuteman II missiles? Was it wise to level the Trident program?

And so, you are looking at the culprit who helped devise the base force, and you have heard me say today that I am, one, yes, living with the results of that in my new capacity as CINCSAC, and, two, that for the purposes of the President's budget, the caveats and the assumptions that go with it, as CINCSAC, I can insure nuclear deterrence over the period of this budget. But that is contingent upon modernization programs. That is contingent upon the B-2. That is contingent upon looking and seeing how things unfold in the START program.

I would also confess that I was the father of a concept to look at a reorganization of the worldwide military command structure. I did that for the simple reason that looking into the out-years, because my title was Director of Strategic Planning, and given the trends in the budget and their obvious impacts over the long-term in shrinking our force structure and bringing most of the forces back to the United States, it made sense to begin now to think about, to develop a concept for restructuring the worldwide organization of our Armed Forces.

I left that concept with the Chairman, and went to my duties at Offutt Air Force Base in Omaha.

At some point, I believe the Chairman has testified it is his intention, as part of a formal biennial review of what is called the Unified Command Plan, to address some of the proposals that are in that concept. I have no idea where that stands. I left it completely in January of this year.

I am sure that the Chairman will keep you apprised of his efforts in future hearings. But I do not have anything to contribute at this point because it was really nothing more than a concept.

Senator LOTT. You said in your statement that all of these things were contingent on a variety of things which you have in your statement, which we have reviewed.

General BUTLER. That's correct.

Senator LOTT. And you repeatedly pointed to the fact that that included the B-2.

General BUTLER. That's correct.

Senator **Lott**. I know it is highly hypothetical, but what if we don't get the B-2, or the funding that has been requested is not there at the level requested by the administration, and, therefore, driving up long-term costs for each system, each aircraft?

General **Butler**. The principal contribution of the B-2, Senator, as I am sure you are aware, is for what we call the out-years. By the time we get significant numbers of B-2 into our inventory, we have crews trained, the airplane becomes fully operational, we will be at the end of this decade.

So that is why the airplane is so important. Because of the long lead-times involved, because of the uncertainties of the period between now and the 1997-1998 timeframe, the B-2 is an absolutely essential portion of the modernization program. I would hasten to add, given my opening remarks, this is not just for nuclear deterrence, but for conventional warfighting in the kind of world that I believe emerges in the aftermath of the Cold War.

Senator **Lott**. Thank you very much.

General Kutyna, I have a couple of questions in my remaining time.

With regard to the ABM Treaty, at what point does the ABM Treaty impact your ability to achieve your mission?

General **Kutyna**. I think it is impacting right now in that we would be doing experiments in the SDI program that we should be doing at this time, except for the restrictions of the ABM Treaty.

So it has started impacting now in terms of cost, performance, and schedule of that program.

Senator **Lott**. I presume that you can answer this next question in public session.

During the Persian Gulf war, did the ABM Treaty impede our ability to protect our troops, the lives of the allies and the civilian population at large?

General **Kutyna**. No. I can say that it definitely did not.

Senator **Lott**. Your statement mentioned that we need a variety of space-based assets, or that we used them, in the Persian Gulf war. This morning, Mr. Welch stated that we used warning systems to cue our Patriot batteries.

It was my understanding that the ABM prohibits use of the systems which could be used to direct fire control for the purpose of defending against incoming ballistic missiles.

General **Kutyna**. I guess I would have to go to the experts on that. But as far as tactical ballistic missiles, I don't think they are within the provisions of the ABM Treaty. So there was no violation that I see from that, sir.

Senator **Lott**. But you clearly do feel that right now, ABM is impacting what we can do or what we would like to be able to do?

General **Kutyna**. Yes sir.

I cannot name the experiments. Again, for that we would have to go to Ambassador Cooper. But, there are things that we would be doing now that are constrained in terms of experimentation, in terms of space shots, intercepts, detections, whatever, that are being constrained by that treaty.

Senator **Lott**. Thank you, Mr. Chairman.

General **Kutyna**. Mr. Chairman, I wonder if I could just clarify one question.

Senator Levin asked me a question about whether the GPALS was covered by a requirement. I can just see a headline in the paper tomorrow that says the President says do GPALS and CINCSPACE says there is no requirement.

I answered that in the context that there is no formal written requirement that addresses GPALS as a specific subject. But GPALS is covered in the overall SDI Phase I requirement as a subset. So the requirement is there under SDI Phase I. There is not a specific piece of paper that addresses GPALS.

Thank you, sir.

Senator Exon. Thank you, General Kutyna. I think it is well that you made that clarification. Senator Wallop.

Senator Wallop. Thank you, Mr. Chairman. I am sort of like Senator Lott in that there are lots of things that I want to say, but there is more that I want to learn. So I will forego the "saying."

General Butler, I noted with interest your statement. You said you had responsibility for two legs of the strategic triad, and you clearly recognized the need for credible and effective offensive deterrent forces, but you virtually make no mention of defense.

Do you consider it as having a strategic role?

General Butler. Oh, yes. And, in fact, we could have mentioned, but did not, that General Kutyna's staff and mine work together very closely. We have a Joint Offense-Defense Integration Planning Group.

Senator Wallop. I think that is important, General, to make that well understood. Lots of people seem to think in the modern era that you can just exist with the old theory of Mutual Assured Destruction. I assure you, sir, that your testimony sounds very much like that is all that is left for us.

We had an intelligence briefing the other day, and without going into the classified nature of it, it is clear that there are five new mobile Soviet missiles. It is clear that we cannot locate them with any comfortable degree of satisfaction.

It is clear that the Soviet commitment to their new strategic structure is now so complete that they cannot sign a START agreement without major changes in that agreement.

So I am very uncomfortable when I hear you are so strongly supporting START objectives. I would ask you two questions.

How do you propose that we enforce the provisions of this treaty when we have not been able to enforce the provisions of any previous one? Second, why do you suppose that the Soviets would willingly solve our strategic problems for us, which are driven by long-range budget views, rather than by strategic views?

General Butler. I would never presume the Soviets would be inclined to solve our problems for us. I think the Soviets only participate in arms control negotiations when they feel like they have something to gain for themselves.

With respect to START, my presumption would be that what they hope to gain is constraints on our programs in order that they might impose or accept limits on their own, simply from a resource standpoint.

But let me be very clear with respect to defenses. Yes, clearly they do have a contribution to deterrence in that they contribute to uncertainty. You will forgive me if I focus on or emphasize strategic offensive forces because that is my charter.

I also knew that General Kutyna was going to be here today; and I'd hoped you would find that our testimonies are mutually supportive.

Senator WALLOP. May I ask you a question?

It is not exclusively your charge—the strategic offensive forces. That is not the title of the command. It is the Strategic Air Command, with defense and offense. The Soviet command structure, as you well know, and in most people's view, is a very inter-related concept. You cannot view them as separate concepts.

General BUTLER. No, that is true. But I suppose I am in the mold of believing that the best defense is a good offense, from the standpoint that I have a charter to attack the Soviet Union, a specified target set, which is included in the guidance.

The contribution that defenses makes, of course, is that from the Soviet side, in terms of the prospective effect that defenses would have on their attack, to the degree that they cannot predict the certainty of their attack, that contributes wonderfully to deterrence.

Senator WALLOP. It also contributes to your ability to retaliate, and if we are now in the situation where we can comfortably locate these new mobile missiles. Let me ask you what your views are of the Soviet proposals under START for downloading and the new type rules.

What impact will they have on your targeting requirements if they are successful in proliferating launch platforms under the downloading rules?

General BUTLER. A certain amount of downloading would be helpful to me, Senator, in order to maintain what we call a balanced and weighted attack. With downloading, when I get into the issue under START limits of having to make trade-offs between ICBM warheads and SLBM warheads in order to keep a relative balance there, I may need that flexibility in order to stay under the 4,900 RV sublimit.

Senator WALLOP. But under their proposed definitions of new type, which virtually allows them to do what they have done——

General BUTLER. The Soviets have been disingenuous with us in certain of their proposals—for example, with respect to the SSN-18 and trying to declare it at 3 rather than 7, which is walking away from the Washington agreement, and that is preposterous, of course.

Senator WALLOP. I guess that is what concerns me when I read in your statement of your support for a process which is leading us inherently away from stability. It has in the past. We have not been able to or are willing to enforce the provisions of START. It seems to me that this is an extension of what I have always noticed, especially in the Air Force, that they use the arms control proposals—in this case START—to take care of the predictions of future budget reductions and one thing or another.

What happens to us, in the Senate, is that we are never able to balance those two judgments. We get a judgment that START will take care of it and we don't get a judgment that, in fact, if it does not or if it is not enforceable, there are real dangers here that we cannot confront.

General **Butler**. That is why the JCS have always said that arms control agreements must be mutual and verifiable, and that the verification provisions are absolutely essential. There are some very stringent verification provisions in this agreement. In fact, they will be quite onerous with respect to my obligations for Soviet inspection of my facilities and equipment.

Senator **Wallop**. Mr. Chairman, my time is up. But I would remind General Butler of one thing. After verification, what? After you have determined that they have violated, then what? No matter how stringent it is, it doesn't help you a damn bit unless you are willing and able to enforce the provisions of it, and we have no means that are proffered, any more than we have had any means proffered for any previous agreement to enforce.

General **Butler**. If I could, Senator, if I am on my own time, I would say two things. First, yes. Following through on violations is absolutely essential. Second, I believe that following through on the Krasnoyarsk radar and the fact that the Soviets are now dismantling that facility because we pointed out it was very clearly a violation of the ABM agreement is some indication that the Soviets will back down when they are confronted with such egregious violations.

Senator **Wallop**. Are they continuing that dismantling?

General **Butler**. They are, sir.

Senator **Wallop**. Some indication was that they had stopped.

General **Butler**. I will check that information, then. I had not had that information.

Senator **Wallop**. Thank you. Thank you, Mr. Chairman.

Senator **Exon**. Senator, thank you very much. I would just add on to what you are saying, and I think you brought up some very interesting points.

When I was in the Soviet Union the week before last, we met with their armed services committee. The question that came up there when I was asking my questions of them, I was asking about the Conventional Forces in Europe proposition and how they felt about START. As usual, and I think you have experienced this, I found that the Soviet legislators and people in their executive branch have a pretty thorough briefing on us who go over there whereas we know little, if anything, about them.

I was struck by the fact that when I started answering these questions, one of the hard-liners looked very coolly at me and said I understand that there are some members of the U.S. Senate who feel there should be linkage between the Conventional Forces in Europe Treaty and START, and we don't see it that way at all. We are ready to prepare to go ahead with START ratification.

This is another way of saying that we know that they are not living up to the Conventional Forces in Europe Treaty, and they have all but admitted it.

This brings us back to the situation that treaties are not any good unless we can have verification of them. But we have to be careful that we don't get ourselves into a situation where we've signed a treaty and we live up to it and they do not.

I am very fearful that this is something we should better explain to the American people.

Senator WALLOP. I would say to my friend that it is my fear, too. But a worse fear is that we negotiate it and then feel bound by the terms of it, having negotiated it, without its ever having been ratified. We saw that in SALT II. We are seeing it now. I think both Generals would tell us that we are seeing it now in compliance officers on the CFE Treaty. Even though it has not even been presented, we are being compelled to live up to the terms which we negotiated while watching them violate the terms which they also negotiated there.

Senator EXON. Let me ask you this question, General Butler.

With regard to the B-2—and I am sure there will be some other questions on this. It has been touched on in some of the other questions that have been asked by other members of the committee.

General Butler, as you know, Members of the House hope to limit the B-2 program to only 15 operational bombers. First, is a fleet of only 15 B-52s a realistic operational force? Second, is 15 B-2s enough of a Stealth force to provide the synergy of penetrating air defenses in the Soviet Union with a mixed force of B-2s and B-1s, that various penetration studies have shown? Third, if the B-2 force is limited to only 15 aircraft, could you support a START treaty along the lines of the current draft treaty?

General BUTLER. The answer to the first two questions is clearly no. Fifteen is not a viable operational force. Fifteen is not adequate to take on the tasks of the bomber and the nuclear deterrent triad, much less a conventional warfighting triad, for which I think the airplane is equally needed.

With respect to the impact on START without a B-2, along with the Joint Chiefs I would have to go back to the drawing board with the administration and reassess our nuclear posture in the outyears without a modernized bomber leg of the triad.

Senator EXON. Is it not your opinion, General Butler—at least it was mine, and I know my view is shared by many members of this committee—that when we helped draft the present treaty, in its present form, we did that with the thought that we would have a substantial inventory of B-2 bombers. I think that was a considerable incentive, to go as far along this road as we have.

Was not that your understanding also?

General BUTLER. Modernization, in my experience, going back to 1974, with regard to the opinion, the support of the JCS for arms control agreements, particularly strategic nuclear agreements, has always been strongly keyed to the continuing modernization of our forces.

I think that is only a prudent and wise position.

Senator EXON. Along these lines, General Butler, suppose we were in a post-war START world and as a result of some crisis, we see the Soviets beginning to mobilize to threaten Europe once again.

There will be lots of warning time available since the Soviets need to bring conventional forces a long distance just to get to the border.

In a situation where both sides have begun to mobilize, say for 6 months to 1 year, how fixed is the Soviet target base that we previously referred to for their strategic forces, for their conventional forces, and for their leadership?

Is it possible that this future Soviet threat will contain a much larger proportion of movable, relocatable, and mobile targets than we see or visualize today?

What implications does this have for the U.S. weapons, like the ballistic and cruise missiles, which basically are programmed, as you know, to fly to a specific location to carry out a specific mission?

What implication does all of this have for the manned penetrating bomber, specifically, the B-2?

General BUTLER. With respect to a reconstitution of their conventional capability, I think that the single greatest difficulty that the Soviets have encountered is the loss of the Warsaw Pact as a buffer. It has restricted the area in which they can maneuver. It has placed them in a much different geo-strategic situation.

My principal concern with regard to the target set in the future is to the degree that my guidance requires me to hold at risk a significant fraction of their strategic nuclear offensive forces, they will have a higher degree of mobility in their ICBM leg. Perhaps as much as two-thirds to three-quarters of their missiles will be mobile. That presents a very difficult problem under current guidance. And the B-2 is, of course, the best asset that we will have to try to take on that mobile target set as it is manifested within the SS-24s, the SS-25s, the mobile command posts, the troops out of garrison, et cetera.

Senator EXON. General Kutyna, let me ask you something about MILSTAR.

One of the earlier complaints about MILSTAR was that it was too much of a futuristic communications and satellite system. Now there have been some changes made in it. One of the main selling points of the revised plan is that the new MILSTAR program would, indeed, provide our field commanders on the scene, ala Kuwait and Iraq in the recent war, a much more up-to-date and get-the-information-to-them-quicker method than we can do with conventional forces.

What is your view on that, as one who has, I am sure, studied this a great deal?

General KUTYNA. I have been with the MILSTAR program for several years, since about 1982, when it started. If I had all the budget in the world, I would like a full-up MILSTAR with the maximum number of satellites, the maximum survivability that I could get, and all those requirements that we have.

But, in a constrained budget, you have to constrain that system. I think the way we have restructured that program is just about right. We have cut down on the number of satellites. We have cut back some of the survivability features. That is a little bit of a risk. But if the threat is being reduced, as we think it is, with the Soviet Union, that is a risk that we can afford to take.

What is important about the MILSTAR is the anti-jam capability to get through to our commanders in the field. Saddam Hussein, had he made even the smallest effort, could have given us a tremendous problem by jamming our satellites. Over 90 percent of the communications to and from the area of operations were carried over satellite systems and over 1,400 satellite communications receivers were used in theater down to unit level. The lack of a viable communications infrastructure in many portions of Saudi Arabia and Kuwait increased our dependence on satellite systems for intra-theater command and control as well.

That is what the redesigned MILSTAR is designed to remedy. It has a medium-rate data rate so a lot of communications can go over that system. They will be resistant to any enemy's jamming and will serve our commanders very well in the field, right down to the unit commanders.

So it is a good restructure.

Senator Exon. Specifically, let me ask you this question.

If you were a Schwarzkopf on the field in Kuwait, would you be convinced that, under the new restructuring of the MILSTAR program, you would be nearly guaranteed to receive a lot more on-the-ground information under the restructured MILSTAR program than you now could provide?

General Kutyna. If there were no threat of a jamming environment, you could get that information through another means, through commercial satellites, through existing satellites.

If there is any threat in the area—which there will be in future conflicts—of a jamming, the statement is correct. You will get a lot more than you would have without MILSTAR.

Senator Exon. Thank you, General. My time is up. Senator Thurmond.

Senator Thurmond. Thank you, Mr. Chairman.

General Butler, how can we close the only ICBM production line in the United States when the Soviet Union keeps open multiple production lines and, according to the Secretary of Defense, is developing five to six new ballistic missiles?

Additionally, assumptions about securing a START Treaty any time soon are waning. Shouldn't we proceed more cautiously on terminating the MX production line, particularly when the vital asset is necessary to keeping our options open for the development of the Small ICBM, and, since we normally keep our ICBM's deployed for longer than their projected deployment life of the system?

I recently asked General McPeak if the Air Force had conducted a serious analysis of the impact of closing the Peacekeeper on future ICBM production capability, such as a Small ICBM, and, if so, would he make it available to this committee. He said he would, but it has yet to arrive.

Are you aware of any such comprehensive study that was used in making the decision to close down the Peacekeeper production line?

General Butler. I read that exchange with General McPeak.

I am not familiar with the status of his reply, but I will find that out and get back to you on that.

Senator Thurmond. Thank you.

[The information follows:]

PEACEKEEPER

We have looked into this issue very thoroughly. The major companies involved with Peacekeeper are very similar to the major companies involved in the D-5 missile, Titan IV and the Delta strap-on space booster program, as well as the Small ICBM (SICBM) program. Of the 8,100 people associated with ICBM production, we anticipate a layoff of 40 to 60 percent when Peacekeeper is terminated, but this would have occurred anyway upon Peacekeeper termination near the end of the POM, as originally planned. Of even more concern is the shortage of suppliers of radiation-hardened avionics parts. This industry has been migrating off shore, and this could cause the United States difficulty in producing future ICBMs, in particular the SICBM. This factor plus others associated with the smaller production base resulting from the reduced Peacekeeper buy could add to the SICBM program cost.

General **Butler**. Second, with regard to closing down the production line, to reiterate what I said a bit ago, a principal calculation with respect to the Peacekeeper missile is not so much directly to the issue of what is the Soviet production; it goes to whether or not the inventory of strategic nuclear offensive weapons that are available to the Nation, to me, as CINCSAC, to target are adequate to the target set, and the answer is yes, it is.

On the other hand, Senator, there is clearly some risk involved in this, and we acknowledged that risk when the decision was made to scale back the test assets, for example, and to reduce testing from 7 to 3, as has been discussed at great length in this committee and elsewhere.

That judgment was based upon the success of the Peacekeeper testing program to date, and the degree of fidelity between operational test results and the engineering predictions that were made for the missile. It was done extraordinarily well.

On the other hand, it is a difficult decision. It is a decision that is driven by declining assets, by declining defense budgets.

Senator **Thurmond**. General Butler, do full MX-Peacekeeper operational flight tests provide a sufficient statistical basis for cutting future MX flight tests from 7 to 3 per year? What will be the degradation in your level of confidence in the reliability and accuracy of the MX-Peacekeeper missile system for the SIOP under the new testing regime of 3 flights per year, rather than 7? If you do not have the information available, would you please provide that for the record as soon as possible?

General **Butler**. I have the information, Senator. But I cannot provide it in open session. Therefore, I will provide it for the record.

Senator **Thurmond**. Thank you.

[The information follows:]

PEACEKEEPER TESTING

I understand your concern about the adequacy of the Peacekeeper flight test program. My staff indicates that for the "initial characterization" portion of the program, which is now scheduled to complete in 1992, there would be no benefit to increasing the launch rate. At the current launch rate of 3 per year, Peacekeeper is expected to provide an 88 percent probability that the true reliability is within 0.10 of demonstrated reliability. Increasing the launch rate to 7 flights per year raises that probability to 91 percent for Phase I operational testing. However, for the degradation detection phase of the flight test program, scheduled to begin in 1993, an increased launch rate may be useful. General Chain made the decision to reduce the number of follow-on operational test and evaluation (FOT&E) based on the highly successful developmental program and our continued budget review. Although we would feel more comfortable with a greater number of flight tests, I think we can accept the moderate increased risk of evaluating the system reliability with the current test rate as I prioritize our budget.

Senator **Thurmond**. General Butler, this committee and the Senate have worked hard to support the B-2 program. Opponents in the House have continually made the argument that you do not need a penetrating bomber, that the Advanced Cruise Missile launched on the old bombers outside the Soviet Union can cover all the targets.

General, for a target strongly defended by modern SA-10 missiles, is it true that you have to depend on the penetrating bomber with SRAM and that the ACM cannot be counted on to penetrate?

General **Butler**. Given the contribution of the manned penetrating bomber to the triad, that is, to hedge against a failure of the ICBM or the SLBM leg, for whatever reason, in order for the logic of the triad to endure, it is absolutely essential that the bomber be able to cover a credible portion of their target set in the event that they do fail.

The bomber cannot make that target coverage with just cruise missiles. It must penetrate in order to do the job adequately. Consequently, it is my number one modernization priority, and it is my belief, therefore, that the B-2 plays a vital role in protecting, preserving, and extending the logic of the nuclear deterrent triad.

Senator **Thurmond**. General Butler, as I note in my opening statement, General Soyster stated that START will have only a minor impact on Soviet capabilities to hold key North American and Eurasian targets at risk. What impact does START have on U.S. capabilities to hold Soviet targets at risk?

According to recent press reports, a targeting review recently completed in the Pentagon allegedly concludes that the United States will be able to hold at risk far fewer targets under START than before, particularly targets once located in Eastern Europe which may have been relocated to the Soviet Union?

General **Butler**. I can adequately, satisfactorily, comfortably execute the SIOP within the terms and conditions of the targeting review, Senator.

Senator **Thurmond**. General Butler, can you tell the committee whether you have seen anything in U.S. intelligence assessments that indicates the Soviets are seriously interested in further reductions in their MIRVed systems, particularly their mobile forces? Specifically, do you see any programmatic changes in the Soviet modernization effort to support an assertion that they are interested in a MIRV ban of some sort?

If the answer cannot be provided in open testimony, would you supply that for the record?

General **Butler**. Given the fact that the Soviets continue to deploy SS-24 missiles, and you have heard from General Soyster that they have a variety of follow-on missiles on the boards that have potentially more than one warhead, it is an indication to me that the Soviets are not interested at this time in any effort toward banning MIRVed systems.

Senator **Thurmond**. General Butler or General Kutyna, in my opinion, one of the lessons from the Persian Gulf war may be that our military forces lack any space-based wide area surveillance capability. Have you heard from CENTCOM or any other military commander involved in Operation Desert Storm whether wide area surveillance is an even more important military requirement?

What are your thoughts on this issue and how could wide area surveillance improve future military operations?

General KUTYNA. Sir, as you are aware, I am a very strong supporter of wide area surveillance systems from space, such as a space-based radar, a space-based infrared system.

In the Iraq war, it would not have been a very large contributing factor because we had that country surrounded with our assets. We had AWACS aircraft. We had other sensor systems all around the country of Iraq.

We may not be as fortunate in a future conflict in this multipolar world that we face, and a wide area surveillance system would become extremely important when we cannot get our own assets into the area of conflict. It would be there almost instantaneously, before a conflict started, to give us warning that something was going on—if the build-up of a conflict were about to occur. During a conflict, if we could not get in there with our own assets, if the environment was too difficult for our aircraft to survive, as they were able to survive in Iraqi air space, a wide area surveillance would give us indications of movement of aircraft and ships anywhere in the world, all day, all night, and all weather.

It's an extremely important asset, number one, to preclude hostilities, number two, to prevent them from escalating, and, number three, to win a war in case we get into one. So I think it is a very important asset that we need some day in the future.

Senator THURMOND. I want to thank you gentlemen for your presence and your impressive testimony.

Mr. Chairman, my time is up, and I have another engagement. I do have a few more questions that I would like to have answered for the record, if you would.

Senator EXON. Thank you very much, Senator Thurmond. Senator Smith, do you have questions for a second round?

Senator SMITH. Yes, I do.

Senator EXON. Senator Smith.

Senator SMITH. Thank you, Mr. Chairman.

As I listened to your testimony and responses to the many questions regarding some of the strategic programs—the B-2 and the ICBM's—I just want to make one statement on the record and then ask a question.

As you know, presently we have no defense against an incoming strategic missile. Instead, we have adopted a Mutual Assured Destruction Strategy.

I would just issue a warning here. If we get some irresponsible action in the next 5 to 10 years by members of the Senate or the House, or both, where these programs are dramatically reduced, we could be in a position where we had neither—the capability to assure the destruction of the Soviet Union or to defend against an incoming missile.

As I hear you, I understand you are good team players. I get the impression—and I don't want you to respond to this; I will just say it—that sometimes you may not like to be on the team.

But having said that for the record, let me just focus, General Kutyna, on the ABM Treaty for a moment.

As we develop ABM technologies, the ABM Treaty, in my opinion, seems to restrict what we are doing more and more. Let me give you an example.

There is a grey area in terms of the technological capability between a Patriot upgrade, which intercepts a tactical missile, and a system which could degrade or intercept a strategic missile.

Now, in your opinion, would an advanced or substantially improved Patriot violate the ABM Treaty?

General KUTYNA. I really don't know where you would cross the line. You would have to get the treaty experts, such as Mr. Wolfowitz and others, to help us with that question.

I can possibly provide something for the record. But yea, verily, somewhere you will cross that line where we will violate the ABM Treaty. But you have to realize that an ABM defense will not work in light of the treaty.

So if you decide to have one of those, wherever it changes from a tactical to a strategic missile defense, you are going to have to do something about the treaty.

Senator SMITH. That is my concern, that we cannot define that line.

The ABM Treaty tries to do that. But I am not sure that the line is definable, as we now see it. I think the Patriot upgrade is the best example of that.

I am concerned about it. I am not asking you to provide any more information for the record on that. But at some point I might want to pursue it.

Is the ABM Treaty—this is for either one of you—is the ABM Treaty constraining our ability to develop technologies which would protect our forces, whether they be in America or whether they be at some location around the globe?

Is that treaty in any way, in your opinion, hurting our ability to protect our forces anywhere in the world, including America or anywhere else?

General KUTYNA. Not with current existing systems. The question was asked was there anything about ABM that precluded us from protecting our forces in Iraq. No, not with current systems.

Senator SMITH. I agree with you in Iraq. Now let's move up from there.

General KUTYNA. But, for the follow-on systems, there are things that we would like to be doing now in research and development of strategic defense systems that we can not because of the ABM Treaty. The technology is there. Possibly the programs are there. The money is there. But we have to design our experiments around that treaty.

So we are not progressing in areas that we could be.

Senator SMITH. I don't want to put words in your mouth and if you do not agree, say so. But, if the United States is going to move now to successfully develop ballistic missile defenses, should we reconsider our involvement with the ABM Treaty or being a party to it?

General KUTYNA. I think once we make the decision to pursue a strategic defense system—and we have not made that decision—we are going to have to address our involvement with that treaty.

Senator **Smith**. I think that is a fair answer. I will stop there, Mr. Chairman. Thank you. Thank you, General.

Senator **Exon**. Thank you, Senator Smith.

Gentlemen, I have concluded that we need not have a closed session. I am going to be out to your bailiwick in the near future, General, and we won't have to worry about sweeping rooms out there. I will get a thorough briefing from you then on these targeting situations, and will explain it to the other members of the committee who are interested.

I would simply advise both of you that there will be some additional questions for the record, and, under the usual procedure, we would appreciate your making us as prompt responses as possible for the record to the questions that will be submitted in writing.

I have enjoyed very much your testimony today, which has been very helpful. The committee appreciates that a lot. We will look forward to having you back again soon. Please feel free to work very closely with the members of this committee because we want to work closely with you on solving these problems that we all have, especially as you have both pointed out, with the constraints of the budget that we are all operating under at this time.

With that, we are, adjourned.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR J. JAMES EXON

U.S. SUBMARINES VS SOVIET SSBNS

Senator **Exon**. General Butler, how do you take into account in your force modeling the potential contribution of U.S. attack submarines in sinking Soviet SSBNs? Is this strategic mission of our tactical submarines a significant factor in the outcome of a conflict?

General **Butler**. The significance of tactical submarines in the strategic arena depends on the scenario examined. Most comparative force analyses assume a scenario where a crisis erupts so rapidly that conventional attrition to either side's SSBNs is precluded in order to better assess the relative capability of nuclear assets.

TANKER REQUIREMENTS

Senator **Exon**. General Butler, in last year's authorization bill, Congress mandated a study of tanker requirements in view of declining strategic and tactical force structure [deleted]. Moreover, the extremely low rate at which the Air Force now plans to complete the reengining program raises doubts about cost effectiveness of further upgrades. At the same time, the Air Force has announced plans to accelerate retirements of older KC-135s. General, how do you assess our tanker requirements and the Air Force's plans to meet them, particularly in light of the extensive use of tanker support during Operation Desert Storm?

General **Butler**. Tankers are an excellent force multiplier. The programmed retirement of KC-135A model tankers is primarily driven by fiscal constraints. I believe that improvements to the remaining tanker force (the reengine program and providing drogue and basket refueling capability as well as boom refueling) will leave us with adequate refueling capability for the nuclear deterrence and the conventional warfighting contributions of SAC as well as general purpose mission support.

SPACE LAUNCH AND MISSILE TEST RANGES

Senator **Exon**. Now that you have assumed responsibility for our space launch and missile test ranges, in what sort of shape did you find them? Had this infrastructure been well maintained? If not, where are we going to find the money to make necessary improvements?

General **Kutyna**. The phased/incremental transfer of space launch facilities to Air Force Space Command is ongoing and will not be completed for several years. Prior to Air Force Space Command assuming control of the launch bases, the senior

Air Force leadership recognized that the bases were aging and approaching obsolescence. Through extensive infrastructure surveys, we found instances where facilities had degraded below acceptable levels and, in some cases, were in great need of repair or refurbishment. In the early 1980s, our policy was to transition to the Space Shuttle as our primary means of military payload delivery in space. Consequently, the Expendable Launch Vehicle (ELV) program and its infrastructure were largely ignored. Low priority and funding allowed the infrastructure to drift into a state of decay. After the Shuttle disaster of 1986, emphasis shifted back to the ELV program with large amounts being spent on booster modification and upgrade, but little expended on launch infrastructure maintenance. The infrastructure survived through the perseverance of maintenance people who kept it working through a decade of austere funding. We are working hard through Air Force programming channels to fund the necessary modernization and repairs.

TACTICAL WARNING AND ATTACK ASSESSMENT

Senator Exon. The Air Force has been trying to upgrade NORAD's tactical warning and attack assessment systems within Cheyenne Mountain for almost a decade. What started out as a moderately expensive and near-term effort has turned into a $2 billion disaster, with literally dozens of different boards and program managers making decisions.

Congress last year mandated a Defense Acquisition Board (DAB) review of this program and insisted that a single manager be appointed to oversee all aspects of the program.

Last year, you were named as the single authority. Are you in fact managing this program? Has anything really changed? The GAO claims that no one is really managing this program.

General Kutyna. At the September 12, 1989 Defense Acquisition Board (DAB), we reported that the six programs which comprise the upgrade have now been fully consolidated into a single Cheyenne Mountain Upgrade (CMU) program. This program is being executed by the Program Executive Office for Command, Control and Communications. I am pleased to report that we have made significant progress since the DAB. In April, we attained initial operational capability (IOC) of the Communications Tech Control portion of the upgrade, 3 weeks ahead of schedule. The message processing capability of the communications Tech Control will become operational in August. In the area of space surveillance and warning, the Space Defense Operations Center 4B, will become operational in June and Phase II of the upgrade to our command center, Granite Sentry, will also become operational in August. Finally the interprogram disconnects which had slowed the progress of the integration efforts have been identified and are being engineered and resolved at a steady pace. It's also significant that these accomplishments have been achieved within the funding baseline as reported to the DAB.

With respect to program management, in my current position as Commander in Chief, NORAD and USSPACECOM, I am responsible for the operational employment of Integrated Tactical Warning and Attack Assessment (TW/AA) systems in support of my missions, but I am no longer directly responsible for the Integrated TW/AA systems management. During my tenure as Commander, Air Force Space Command, it was my responsibility as System Executive Manager (SEM) to manage and control end-to-end Integrated TW/AA system technical integration and integrity. I was actively involved with the progress and review of the CMU programs and instituted a Quarterly Review to bring together key players for recurring evaluation of the programs. My successor as the SEM and Commander, Air Force Space Command, Lt. Gen. Thomas Moorman, has continued this activity and keeps me well informed. Additionally, I have instituted a program called CINC Periodic Reviews. Under this program, I review the CMU Programs quarterly.

Additionally, the Integrated TW/AA System Management structure, as outlined in JCS Memorandum SM-27-86, January 24, 1986, is presently under review by the JCS. This review was initiated at the request of the Air Force Chief of Staff, in his role as the Integrated TW/AA Executive Agent (EA). But until changes are approved the EA and SEM, as presently assigned, retain management responsibility for the Integrated TW/AA System Management.

In summary, the CMU programs are making good progress within the System Executive Management Structure.

QUESTIONS SUBMITTED BY SENATOR SAM NUNN

ABM/START

Senator NUNN. The Soviets have consistently maintained that START is only possible if the United States continues to observe the ABM Treaty as it was signed in 1972. Do you believe them? What would be the implications for SAC in terms of its requirements and targeting if the United States were to abrogate the ABM Treaty and the Soviets were in turn to not only cease to observe that agreement but also withdraw from START, assuming START was in force at the time the U.S. chose to abrogate the ABM Treaty?

General BUTLER. The Soviets no longer formally link the ABM Treaty with START.

We assume that if the U.S. deployed defenses to defend against limited ballistic missile strikes, the Soviet Union would probably choose to deploy ABM defenses beyond those they currently deploy. The significance of such ABM defenses would depend upon their effectiveness and the extent of their deployment. It is not possible to make concrete recommendations concerning the hypothetical situation described in this question. First, we do not know how effective Soviet defenses deployable within the next decade would be. Second, we do not know how extensive their deployment would be. Third, in order to make specific decisions with regard to the adequacy of our deterrent forces, we would have to take into account the totality of our strategic posture including the contribution of the strategic defense forces we would have under the hypothetical situation described in this question.

The appropriate balance of U.S. strategic offensive and defensive forces under such a scenario would depend upon many factors including the effectiveness of U.S. forces and the actual actions taken by the Soviet Union. Decisions with regard to U.S. forces would have to be made in the context of the concrete situation that unfolded.

Last, as you are aware, both the United States and the Soviet Union agreed in the June 1990 Joint Statement that follow-on strategic negotiations would seek to "implement an appropriate relationship between strategic offenses and defenses." Such negotiations, to which both sides are committed, are designed to address in a cooperative and constructive fashion the issues posed by this question.

POST-CFE/POST-START

Senator NUNN. Assume we are in a post-CFE, post-START world in which Soviet conventional forces withdrawals from Eastern Europe to "beyond the Urals" have been completed. Now assume that some future Soviet leadership decides to resurrect an invasion threat to Western Europe (and, of course, Eastern Europe in passing). We have been told that the lead time for such an undertaking is now measured in many months, perhaps years, to bring much of its conventional capability up to full readiness and move units to more forward locations in the Western Soviet Union.

While all of this mobilization and movement forward is occurring, I assume it will continue to be SAC's job to hold at risk the panoply of leadership, nuclear forces, conventional forces, and war supporting industry that constitutes "deterrence." Yet it seems to me that many more of the specific targets in this base will be either mobile, movable or relocatable targets. I do not refer just to mobile ICBMs, which may well be the most challenging category of target to hold at risk, but rather to a whole host of conventional ground combat units moving westward from their garrisons, to tactical aircraft relocating forward from their home bases, to air defenses being repositioned or relocated, to strategic force generation and dispersal, and to leadership dispersal.

Thus, it seems to me that CINCSAC's job is likely to be much more difficult and complex in this new environment than it was when we assumed a short-warning (10/14 days) conflict in Europe, with potentially rapid escalation to nuclear conflict.

General Butler, do you agree with this characterization of the future environment? If so, what are the implications for our future force mix of ballistic and cruise missiles, which must be targeted against fixed targets or targets whose location is relatively precisely known, and penetrating bombers, which presumably have some capability to search for imprecisely located targets?

General BUTLER. I agree with the general thrust of your characterization of the future environment, one which, I believe, emphasizes the need for both robust nuclear deterrence and conventional warfighting capability. Such a characterization underscores the relevancy of my conclusion that SAC's mission is best described in terms of two Triads, nuclear deterrence and conventional warfighting.

With respect to nuclear deterrence, even with all the mobilization and movement forward you describe, a finite set of fixed targets remains which will require the prompt response of ballistic missiles as well as cruise missiles and penetrating bombers. Moreover, current indicators certainly point to an increase in mobile or movable targets, both nuclear and conventional. Within the overall context of the nuclear deterrent mission, the penetrating bomber offers the best potential to hold these targets at risk. I firmly believe SAC can maintain strategic nuclear deterrence during such a buildup if we are successful in enhancing nuclear deterrent capability and crisis stability through the parallel paths of force modernization and arms control.

Turning to our conventional warfighting needs so aptly illustrated in your characterization, SAC forces can provide special conventional capability and support to the responsible theater Commander in Chief. Obviously, both tankers and reconnaissance aircraft play a vital role in the conventional arena. But the role of the long-range bomber in future conventional warfare cannot be overstated. Its unparalleled responsiveness, payload and flexibility coupled with a capability to hit targets too far for other air assets or to loiter and strike moving targets identified by other sources, like JSTARS, make the bomber an irreplaceable instrument of conventional warfighting.

Thus, a mix of weapon systems remains essential to the nuclear deterrent and conventional military strategy. To this end, the fiscal year 1992 Presidential budget for SAC provides an appropriate mix of weapon systems to address the enduring and emerging realities. The ballistic missile force can and will grow smaller as a consequence of a less confrontational Soviet Union and in accordance with START objectives. The planned cruise missile force has been similarly downsized. However, whether for nuclear deterrence or conventional warfighting, the capacity of the B-2 to exploit and adapt to new technology makes it a powerful instrument of national policy. It is the weapon system best designed to preserve U.S. security interests in the 21st century—particularly in such an environment as you have described.

FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTERS

Senator Nunn. As you know, the fiscal year 1991 Defense Appropriations Act directed a 12 percent cut in all of the Federally Funded Research and Development Centers (FFRDCs) for fiscal year 1991 and suggested that a further 10 percent cut might be taken in fiscal year 1992. I know that several of these FFRDCs, including the Aerospace Corporation, support the national defense space effort. I would be very interested in your views on the value of the FFRDCs relative to the Nation's space capabilities and the consequences of these actual and proposed cuts.

General Kutyna. In one forum or another, I have worked with our FFRDCs, particularly the Aerospace Corporation and Mitre, for more than 20 years. During this period I found the talents and capabilities of these institutions to be very instrumental in helping to achieve our goals.

Space systems are among the most complex and costly of any large class of warfighting hardware in our inventory. However, unlike ships, planes or tanks, we cannot gradually and incrementally develop, test, and modify them in the arena in which they must perform. Once we commit the launch vehicle, a space system is on its way to a very harsh, remote and unforgiving operational environment. We cannot bring it back for maintenance, refueling, or modification. It has to work right the first time; and, it must continue to do so for 5, 10, or 20 years with no human intervention save a beam of radio energy.

Despite these challenges, the contributions of space systems are very great. There are no other means through which we could gain the efficiencies and effectiveness in surveillance, warning, communications, navigation, and weather that we reap from our space-based assets. They are worth the investment. However, because of their costs and complexities, the penalties of failure, and the vital services space systems provide, the team responsible for their design, development, launch, and operations must be exceptional in its technical competence, breadth and depth of experience, objectivity and impartiality, and flexibility to respond.

The space systems development and operations team is composed of four major players—the uniformed military, government civilians, industry, and our supporting FFRDC, the Aerospace Corporation. While each of the four elements contribute substantially and effectively, the FFRDC responsibilities are unique and fill a role that is difficult to assign to other components of the team. For example, while our military members are exceptional in their motivation and application to the task, it is extremely rare to find an officer or enlisted with the required hands-on industry experience in specific space disciplines. Similarly, military career patterns make it very difficult to retain the corporate memory required for the successful evolution of these very complex systems. Industry experience, specialization, and continuity are readily available across the spectrum of talent resident in the FFRDC. Limitations also apply to our civil servants. At the wages we are allowed to pay, we simply cannot attract and/or retain sufficient government civilians with the specialized skills and experience we need.

It is true that private industry can provide this experience, although few companies offer the breadth we require. However, what industry normally cannot provide is the objectivity of a not-for-profit organization, unconstrained in handling multiple contractors' proprietary data, and offering a continuity of corporate memory that stretches for decades.

In recognition of the above, the employment of an FFRDC type organization was directed by Congress to help provide the general systems engineering required in the space systems acquisition process. This resulted in the formation of the Aerospace Corporation. The same form of assistance has recently been recommended by the Augustine Commission for NASA. The FFRDCs have provided precisely that which is so difficult to obtain in all other segments of the space acquisition and operations team.

In the fiscal and geopolitical environment which has evolved, all must take cuts. However, as we reduce our forces and retrench from outposts throughout the world, it is obvious that the importance of space systems and the global services they provide is increasing rather than declining. In any future crisis or conflict, space forces, by their very nature, will be first on the scene. The contribution of our FFRDCs, to the effectiveness of those forces is very significant. As we seek necessary budget reductions we must ensure that FFRDC funding is appropriate to the task at hand.

Senator NUNN. As you know, the fiscal year 1991 Defense Appropriations Act directed a 12 percent cut in funding for each of the Federally Funded Research and Development Centers (FFRDCs), and suggested a further reduction of 10 percent be taken in fiscal year 1992. I know that several of these FFRDCs, including Project AIR FORCE at the RAND Corporation provide support to the Air Force. In light of the considerable changes occurring in the international environment, I would appreciate your views on the value of the FFRDCs to the Air Force as a whole and to your command, and on the consequences of the actual and proposed funding reductions.

General BUTLER. The phenomenal pace of events in the international security arena, coupled with our efforts to reshape defense capabilities to meet the challenges of the next century while reducing the size of the defense budget, suggest to me that now is not the time to reduce funding for FFRDCs.

We have entered uncharted waters given the unparalleled changes in the international landscape and given the direction we must take to maintain a sufficient military capability for the future. Organizational changes, doctrinal changes, and policy adjustments being implemented and/or considered today truly are evolutionary. As we transition to a much different military, I would prefer to have the assistance provided by the FFRDCs.

In recent months, several FFRDC-conducted studies have helped SAC grapple with difficult issues. For example, the RAND Corporation completed a study on alternative concepts for aerial refueling of deploying tactical fighter aircraft. As a result, we plan to modify a number of tankers to include drogue, multipoint refueling capability. This measure will improve the efficiency of our tanker force as measured by the receiver-to-tanker ratio and has allowed us to program for a smaller overall tanker force. Project AIR FORCE also has done useful work in assessing the number of bombers required to fulfill future nuclear and conventional missions. These findings have been briefed by RAND officials to the Congress.

Another FFRDC, MIT's Lincoln Laboratory, also provided useful analysis in recent months. They created a model allowing the JSTPS and SAC to include terrain masking and low observable characteristics to enhance defense penetration by bombers. We are now integrating essential elements of this model into our strategic planning process.

I do not believe that FFRDCs, or any other element of the Defense budget, are immune from budget cuts. However, I believe that FFRDCs can be very useful during the period of transition to a very different, more streamlined and efficient military. This is especially true in those areas where institutional and organization bias stand in the way of smooth change. The immunity from such bias enjoyed by the FFRDCs will make them a valuable aid to decision makers in the next few years.

Questions Submitted by Senator Strom Thurmond

PEACEKEEPER TESTING

Senator **Thurmond**. General Butler, do four MX Peacekeeper operational flight tests provide a sufficient statistical basis for cutting future MX flight tests from seven to three per year? What will be the degradation in your level of confidence in the reliability and accuracy of the MX Peacekeeper missile system for the SIOP under the new testing regime of three flights per year rather than seven? If you do not have the information available, would you please provide it to the committee as quickly as possible?

General **Butler**. I understand your concern about the adequacy of the Peacekeeper flight test program. My staff indicates that for the "initial characterization" portion of the program, which is now scheduled to be complete in 1992, there would be no benefit to increasing the launch rate. At the current launch rate of three per year, Peacekeeper is expected to provide the necessary confidence levels for reliability and accuracy. Increasing the launch rate to seven flights per year raises that probability. However, for the degradation detection phase of the flight test program, scheduled to begin in 1993, an increased launch rate may be useful. General Chain made the decision to reduce the number of follow-on operational test and evaluation (FOT&E) based on the highly successful developmental program and our continued budget review. Although we would feel more comfortable with a greater number of flight tests, I think we can accept the moderate increased risk of evaluating the system reliability with the current test rate as I prioritize our budget.

FOLLOW-ON EARLY WARNING SYSTEM

Senator **Thurmond**. General Kutyna, I understand that the follow-on system to the Defense Support Program is under-going final review. Can you tell us how the follow-on program or Advanced Warning System will be structured? Does this restructured program meet CINCSPACE and JCS requirements, particularly those revised requirements formulated during the 1990 August review of the AWS program?

General **Kutyna**. The Deputy Secretary of Defense has approved a follow-on Tactical Warning/Attack Assessment (TW/AA) system. The TW/AA follow-on program is not the Boost Surveillance and Tracking System (BSTS)/Advanced Warning System (AWS) renamed. The BSTS/AWS program is being terminated. The intent of the follow-on program is to buy an improved capability above the Defense Support Program (DSP)-I for a cost lower than AWS, accepting that the follow-on capability will be less than envisioned for AWS. The link to AWS is that the follow-on will have growth potential toward the AWS Summit II requirements through future upgrades.

After careful consideration, the DOD has selected a strategy of pursuing a competitive, enhanced TW/AA system to provide this follow-on capability.

General features of the follow-on system will include the following: [Deleted]; b. Crosslinks among satellites; c. Stereo coverage (i.e., two satellites capable of viewing each missile launch); d. Improvements in accuracy, timeliness, and probability of detection.

This initial follow-on system will meet the basic requirements formulated during the 1990 August review of the AWS program for the timeframe that it will be fielded. The system will provide the following operational benefits: [Deleted]; c. Stereo coverage provides accuracy improvements; [deleted]; e. The competitive approach incorporates relevant, already completed BSTS and AWS technology; f. The approach provides the potential for future improvements in detection performance to a level comparable to the AWS.

SOVIET MIRVED SYSTEMS

Senator **Thurmond**. General Butler, can you tell the committee whether you have seen anything in U.S. intelligence assessments that indicates the Soviets are seriously interested in further reductions in their MIRVed systems, particularly their mobile forces? Specifically, do you see any programmatic changes in the Soviet modernization effort to support an assertion that they are interested in a MIRV ban of some sort? If the answer cannot be provided in open testimony, would you supply it for the record?

General **Butler**. Overall, the intelligence community assesses the Soviets will largely go to [deleted] launcher force structure within START RV limits. Specifically, the intelligence community expects the Soviets to [deleted] on follow-on versions of the [deleted] as well as future and, possibly, present versions of the [deleted]. Additionally, the Soviets declared the SS-N-18 SLBM will have a loading of only three

RVs vice the seven RVs declared at the Washington Summit in December 1987. We currently project the Soviets will equip their [deleted]. However, two significant exceptions exist to Soviet efforts [deleted]. The SS-18 silo-based ICBM will [deleted] to be used against U.S. hard targets. The SS-25 follow-on road-mobile ICBM system is now assessed to [deleted] deployed today.

While the Soviets have made statements regarding START follow-on negotiations that low MIRV loading would be more stabilizing, the intelligence community has observed [deleted].

TARGETING UNDER START

Senator THURMOND. General Butler, as I noted in my opening statement, General Soyster asserted that "START will have only a minor impact on Soviet capabilities to hold key North American and Eurasian targets at risk." What impact does START have on U.S. capabilities to hold Soviet targets at risk? According to recent press reports, a targeting review recently completed in the Pentagon allegedly concludes that the United States will be able to hold at risk far fewer targets under START than before, particularly targets once located in Eastern Europe that may have been relocated into the Soviet Union.

General BUTLER. The anticipated START Treaty provides a rational approach to bounding and balancing Soviet and U.S. strategic nuclear forces. But START is only one factor among many which collectively determine the appropriate size and capability of the strategic nuclear arsenal. When all factors are considered, if we proceed on a parallel path with arms control and strategic modernization, as proposed in the fiscal year 1992 Presidential budget, we will have sufficient modernized capability to hold Soviet targets at risk, particularly in light of the recent targeting review.

TACTICAL WARNING SURVIVABILITY

Senator THURMOND. General Butler, you state in your prepared testimony that "with regard to its nuclear deterrence role, the single most important contribution of the bomber is to hedge against the failure or reduced effectiveness of the land- and sea-based missile forces, whether due to a technological catastrophe or breakthrough, or a direct Soviet attack." Is not the bomber just as vulnerable as the ICBM force to Soviet attack under tactical warning conditions? What percentage of the bomber force is on alert at any one time as opposed to ICBMs?

General BUTLER. Intelligence indicators would provide warning of a greater potential for attack. These indicators would trigger DEFCON levels that place bombers on higher states of alert. Thus, in all but the unlikely "bolt-out-of-the-blue" scenario, bombers would be airborne, ensuring their survivability and later use as a hedge. The bomber alert rate can vary based on needs while the ICBM alert rate is fairly stable near [deleted]. As a routine day-to-day posture, the fiscal year 1992 budget funds a [deleted] alert rate for our bomber force.

ICBM MODERNIZATION

Senator THURMOND. General Butler, you stated that ". . . a modernized bomber force is essential to preserve the logic of the nuclear deterrent Triad in the face of ongoing Soviet efforts to upgrade every element of their own strategic nuclear forces at a pace that far exceeds our own." Does not this same logic compel us to also pursue a more credible ICBM modernization program to ensure the United States has sufficient prompt hard-target kill capabilities, which is the core of the Soviet strategic modernization program and, indeed, their nuclear warfighting strategy?

General BUTLER. Our nuclear deterrence strategy is based on a Triad of strategic nuclear forces. Soviet advances which affect the credibility of any Triad leg must eventually be countered to maintain our deterrence strategy. Bomber modernization is required not only because of current and projected advances in Soviet air defenses but also to expand the role of the bomber in future conventional warfare. Our first priority should be to maintain the bomber leg's nuclear deterrent credibility. The B-2 is the system to do just that, but it also will revolutionize conventional warfighting. With respect to nuclear deterrence, the size of the target base will likely shrink by the late 1990s but the number of heavily defended targets will not. The B-2 will ensure coverage of these high-value targets. The United States has prompt hard-target-kill capabilities in our ICBM systems. Soviet advances in hard-target-kill capabilities will have little effect on the ICBM leg deterrent credibility as long as the National Command Authority retains the capability to execute a prompt retaliatory launch. Because the bomber leg credibility will be increasingly threatened as we approach the end of the decade, its modernization should be our highest priority.

Modernization of the ICBM leg, while important, is less critical at this time because it continues to provide a substantial contribution to deterrence.

B-52 EFFECTIVENESS IN DESERT STORM

Senator THURMOND. General Butler, how effective were B-52s in accomplishing their missions during Operation Desert Storm? Of the total tonnage of munitions dropped by B-52s, what percentage damaged or destroyed their targets? What types of new munitions does the Air Force envision to improve the accuracy of weapons used by strategic bombers?

General BUTLER. [Deleted.]

With a look to the future, we envision developing new families of munitions possessing the accuracy displayed by the smart weapons employed during Desert Storm with the addition of better all-weather and autonomous (launch and leave) capabilities. The requirement for standoff munitions will increase as the lethality of the defenses increases. This is especially true for conventional (nonstealth) aircraft. However, there will continue to be a need for area coverage munitions.

There may be some targets that require weapon(s) which only a long-range bomber is suited to carry. The requirement's mix of point versus area and standoff versus overflight weapons will be determined through analysis of the future aircraft force structure and the theater commanders' war plan.

SCUD LAUNCHERS

Senator THURMOND. General Butler, you state in your prepared testimony that strategic bombers ". . . helped track down and attack SCUD launchers." Can you tell the committee how strategic bombers helped in this mission?

General BUTLER. [Deleted.]

SIOP TARGETING

Senator THURMOND. General Butler, in your prepared testimony you stated that the JSTPS process must ensure that every weapon and every target is fully in keeping with the guidance from higher authority and "that it passes [your] logic check with regard to each target and each weapon." You further stated that it should also be consistent ". . . with arms control objectives and proposed constraints . . . ." First, could you please tell the committee what your "logic check" is, and have you ever deviated from the guidance of "higher authority" if it did not agree with your logic check? Second, what role do "arms control objectives and proposed constraints" have in SIOP or nuclear war planning?

General BUTLER. The "logic check" you refer to reflects the relationship between the unique characteristics of weapons and a particular target set which makes a weapon more or less effective when employed against individual elements of that target set.

For instance, Peacekeeper (PK) ICBMs possess the characteristic of being prompt as well as having a hard-target-kill capability.

Therefore, using PK to hold hardened Soviet ICBMs at risk would be a most logical weapon system. Similarly, in all weapons allocations, the aforementioned "logic check" is accomplished in order to maximize damage levels which are directed by higher authority.

The SIOP is an operational plan for how we would employ forces should deterrence fail today. As such, it deals with today's reality. It does not anticipate the future, nor does it establish requirements. HQ SAC and USAF have the responsibility to develop requirements plans. These do fully anticipate alternative futures, including a START agreement, and the impact of these alternative futures on requirements.

CRUISE MISSILE DEFENSES

Senator THURMOND. General Kutyna, there has been a lot of attention focused on ballistic missile defenses as a result of the Patriot system in the Persian Gulf war. Yet, one of the growing threats to the United States and our forces overseas is in the area of cruise missiles. Many developing countries are focusing their attention on the development of these systems rather than ballistic missiles. Do you equally support the need for defenses against cruise missiles as well as ballistic missiles? Shouldn't we also start to address this threat in our R&D efforts? Is the Air Defense Initiative best suited to develop such defenses?

General KUTYNA. The Patriot versus SCUD events during Desert Storm highlighted the need for an effective theater/tactical missile defense system. Perhaps an even more strategically significant, but for some reason less analyzed, interaction occurred when the Iraqi defense system was forced to try to deal with U.S. and coalition cruise missiles. One can readily imagine the added difficulty Coalition forces would have faced had a more formidable enemy possessed a stealthy cruise missile attack capability.

— The Senator's point on the apparent proliferation and rapid development of cruise missile technology on the part of potential future enemies is well taken. The cruise missile presents unique challenges due to the small size, a varied and maneuverable flight profile, and both air and sea launched variants. A sophisticated cruise missile threat, regardless of scenario, is a stressing challenge for the defensive system in any theater of conflict including North America. To effectively counter such a threat requires a robust system of surveillance, detection, tracking, engagement, and command and control systems integrated with survivable communications connectivity.

— The specific need for defenses against cruise missiles has been fully articulated, defined, and validated in the form of CINCNORAD Statements of Operational Requirement (NSORs). Failing neutralization of the cruise missile carrying platform prior to launch of its weapons, the capability to detect and destroy the missile itself is needed.

— The Department of Defense, and specifically the Office of the Secretary of Defense (OSD) has been pursuing extensive research and development efforts focused on the projected future low observable cruise missile threat for several years. NSDD-178, signed by then President Reagan in 1985, established the Air Defense Initiative (ADI) Program. ADI funding has done a fine job of contributing to technology development and requirements definition, and attempting to define an integrated architecture for strategic air defense.

— A full scale development of an ADI defensive system requires a national commitment to ensure adequate warning and protection against a possible cruise missile threat to North America.

SOVIET UNION THREAT

Senator THURMOND. General Kutyna, I want to compliment you on your very sober and careful assessment of the threat still posed by the Soviet Union. It is one of the most thoughtful and informative unclassified presentations of the geopolitical situation facing our Nation. You stated in your prepared testimony that "By the year 2000, mobile systems could compose about two-thirds of the Soviet ICBM force—a sobering thought for future commanders of our strategic offensive and defensive forces."

Given the difficulty we had in countering Iraqi mobile missiles during the Persian Gulf war, and in the unlikely event that we can develop or afford the cost of an airborne platform of sensors to counter these systems, is not the best way to counter mobile missiles through ballistic missile defenses?

General KUTYNA. The most effective way to counter this threat is through the use of space-based launch warning sensors and ballistic missile defenses. That is why President Bush has refocused the SDIO activities to concentrate on providing protection from limited ballistic missile strikes, whatever their source (Soviet Union, Third World Nation, fixed or mobile launchers).

W-88 WARHEADS

Senator THURMOND. General Butler, until the Department of Energy is able to deliver W-88 warheads for the Trident D-5 missile (which could be years), I understand that the Navy plans to mount the warhead from the C-4 missile. As I understand it, this warhead is smaller and less accurate. Does this mean that Trident has much less lethality against hard targets than we assumed when we agreed to START?

General BUTLER. Yes. Lethality of a weapon is comprised of the yield of the weapon and the accuracy of the delivery system. The W-76 warhead has a smaller yield than the W-88 warhead. While the D-5 missile is significantly more accurate than the C-4, the increased accuracy does not totally compensate for the smaller yield. It should also be noted that all targets are not hard targets and do not require the W-88 warhead. It has been the intention for several years to provide a mix of W-76s and W-88s on Trident submarines.

TRITIUM PRODUCTION

Senator THURMOND. General Butler, the Department of Energy is now unable to produce tritium for warhead boosting. Any future production will depend on the restart and operation of a reactor that will be over 40 years old by the end of the decade, and on the startup of a new production reactor that is in the paper stage. Realistically, I have to conclude that there is a good chance that the total number of warheads available to SAC might drop dramatically in the next 10 years—regardless of what the Russians might do or say. Does this figure in your plans?

General **Butler**. Assuming the tritium is reserved to meet the weapons stockpile requirement and decays at a rate of 5.5 percent per year with no replenishment, the tritium demand of strategic and tactical systems exceeds the supply [deleted]. Given the top prioritization of strategic warhead tritium requirements, strategic stockpile requirements could theoretically be met [deleted]. In reality, tritium will probably not be optimally allocated because of the complex logistics of reprocessing the correct number of tritium bottles. Therefore, the DOE capability to satisfy stockpile requirements will be questionable [deleted]. We are working this problem actively. Some of the solutions include accelerated weapons retirements, [deleted] and tritium conservation activities.

WEAPONS IN A STRATEGIC COMMAND

Senator **Thurmond**. General Butler, with the B-2 (and only with the B-2) you have the capability of delivering pinpoint accurate conventional bombs anywhere in the world—including the Soviet Union, if need be. Do you see a role for nonnuclear weapons in a strategic campaign against a nuclear power?

General **Butler**. Although nonnuclear weapons are not currently used by SAC forces in SIOP or NSO planning, the possibility of their future use does exist. As the accuracy of precision conventional weapons increases, their use becomes more likely. SAC's requirement is to achieve a specified damage expectancy on tasked targets. Should future conventional weapons possess the capability to achieve the required damage against selected targets, I see no reason to limit their use.

INERTIAL GUIDANCE KITS

Senator **Thurmond**. General Butler, it will apparently be possible and affordable to add inertial guidance kits to glide bombs. Will this give the B-2 the kind of accuracy the F-117 showed in Iraq?

When could we have these weapons, and have you asked for them in the budget?

General **Butler**. With the current technology, a bomb with an inertial guidance kit (IGK) would not achieve F-117-like accuracies on any aircraft. An IGK-like weapon will achieve substantially better accuracies than unguided glide bombs but not the 10-foot accuracies possible with the F-117 laser-guided system. The earliest an IGK could be incorporated on the B-2 would be in 1996.

B-2 CONVENTIONAL WORKLOAD

Senator **Thurmond**. General Butler, the F-117 carried two bombs and could literally drop them down an air shaft. The B-2 would carry 50 or 60 such bombs. Could a bomber crew handle the workload of that many designated weapons, or would you prefer the Inertially Aided Munitions?

General **Butler**. The F-117 carried two 2000-lb. class munitions. The B-2 will be able to carry up to 16 2000-lb. weapons, not 50 to 60. The B-2 can carry up to 80 500-lb. class weapons but these do not use the same designation procedure as 2000-lb. laser-guided bombs employed by the F-117. We're still evaluating the types of precision weapons the Air Force wants to incorporate on the B-2. Laser-guided weapons and inertially aided munitions are among the candidates we're considering.

KC-135 REENGINING

Senator **Thurmond**. General Butler, I saw a statistic that dramatizes the need for tankers. In the Persian Gulf action, the United States dropped 125 million pounds of bombs—but we used 1.2 billion pounds of fuel—10 times as much. That seems to me to reinforce the need for the KC-135 reengine program. This year, the Air Force is requesting only 18 kits. What is the most efficient production rate to buy out this program, and what is your recommendation?

General **Butler**. I certainly agree. Our tankers proved once again the importance air refueling plays in the overall Air Force mission, and the KC-135 reengining program has been a great success story. When the reengining program was originally conceived in the early 1980s, the projected conversion rate was 72 aircraft per year. However, budget constraints have forced the Air Force to evaluate the conversion rate on nearly an annual basis to ensure funding is available for equally important programs. While the most efficient conversion rate to complete the program buy is currently 50 aircraft per year, increasing the conversion rate at the expense of other important Air Force programs would not be prudent. Therefore, my recommendation is to maintain the current programmed conversion rate of 18 aircraft per year. This will ensure the program remains viable and allows funding to support other critical Air Force programs.

[Whereupon, at 3:59 p.m., the committee adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEARS 1992 AND 1993

THURSDAY, APRIL 25, 1991

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

FISCAL YEARS 1992 AND 1993 DEFENSE AUTHORIZATION REQUEST AND THE FISCAL YEARS 1992–1997 FUTURE YEAR DEFENSE PLAN

The committee met, pursuant to notice, at 3:18 p.m., in room SR-222, Russell Senate Office Building, Senator Sam Nunn (chairman) presiding.

Committee members present: Senators Nunn, Exon, Dixon, Glenn, Warner, Thurmond, McCain, Lott, and Smith.

Professional staff members present: William E. Hoehn, Jr., David S. Lyles, and Michael J. McCord.

Minority staff members present: Patrick A. Tucker, minority staff director and counsel; Ronald P. Kelly, George W. Lauffer, John E. Mansfield, Mark B. Robinson, and Ann Elise Sauer, professional staff members.

Staff assistants present: Mary J. Kampo and Debra A. Rice.

Committee members' assistants present: William J. Lynn, assistant to Senator Kennedy; Phillip P. Upschulte, assistant to Senator Glenn; Leon S. Fuerth, assistant to Senator Gore; James M. Bodner, assistant to Senator Cohen; and Anthony H. Cordesman, assistant to Senator McCain.

OPENING STATEMENT OF SENATOR SAM NUNN, CHAIRMAN

Chairman NUNN. The committee will come to order.

Senator Warner has gone to the floor, we have a budget resolution pending and the question now is whether to cut the defense budget. That is the dilemma those of us who are involved in trying to preside over committees and also respond to the activities on the floor face all the time; but I would like to get started with the idea that I am going to have to leave soon. I know other members would like to attend, but most of them are on the floor waiting on the debate and the vote. We are going to have to recess and come back, but let me give my opening statement and we will get started.

This afternoon the Armed Services Committee meets to receive testimony from the Hon. Charles A. Bowsher, the Comptroller General. He is accompanied by Mr. Frank Conahan, who is the assistant Comptroller General in charge of the National Security and International Affairs Division. This is the fifth consecutive year that the Armed Services Committee has invited Mr. Bowsher to testify on the General Accounting Office assessment of the administration's budget submission.

The National Defense Authorization Act for fiscal years 1988 and 1989 contained a provision that required DOD to submit a 5-year plan that agreed with the defense spending levels in the President's budget every year.

Last year the Department of Defense failed to submit a 5- year defense program that met the 5-year spending targets in the President's budget. This year, however, for the first time, the Congress has received a defense plan that agrees with the defense funding levels in the President's budget over the next 5 years. These funding levels are the same as those adopted in last fall's budget summit agreement. We have not had this situation in many years, if ever, and I think it is appropriate that we have asked Mr. Bowsher to give us his assessment of the fiscal years 1992 and 1993 defense budget, and the associated fiscal years 1992 to 1997 future years defense program.

In addition to reviewing the Defense Department's future years defense program, Senator Warner and I have asked Mr. Bowsher to address several other questions in his testimony today. We have asked him to present his observation on programs or activities in the Defense Department that are not being managed as efficiently as possible and to give us any recommendations he has for improvements.

We have also asked him to comment on any lessons learned from Operation Desert Shield and Desert Storm that the Congress should take note of as we formulate this year's defense authorization bill. I know full well that we could have nothing more at this stage other than an interim set of observations.

Finally, we have asked for his initial assessment of Secretary Cheney's list of proposed base closings, but it is my understanding you will be coming forth with that at a later date.

Mr. Bowsher, I want to again thank you for what you do and for all your dedicated people in the General Accounting Office, for the assistance you have provided to the committee throughout the year from briefings to detailed investigations. The GAO personnel provide outstanding support to this committee day in and day out. We are pleased to have you here this afternoon.

Senator Warner wants to be here when you testify, and we both need to be on the floor for the next 10 or 15 minutes of debate, and then we will have a roll call vote. So, let me turn to Senator Glenn and see if he has any observations. At this stage, John, I think what we are going to need to do is recess because Senator Warner would like to be here, and I have to be on the floor also. This is important testimony, and it would be unfair to our witnesses to proceed without having those of us present that desire to hear it. If you will understand the fact that we do not have control of the Senate schedule, and after 18 years, I have come to the conclusion no one has control of the Senate schedule.

Senator GLENN. They have about 5 minutes debate, a maximum 10 minute vote, and we have about three more lined up right now I think. So, that takes care of about the next hour and a half.

Chairman NUNN. Let me go over and talk to Senator Warner, and we will get back to you. I wanted to make sure we had this testimony. If it looks like it is going too long, what I will do is call back and we will reschedule, because I do not want to have you sitting around here all day waiting on us. I know you have to be back at 6 o'clock, and I know there are a lot of members who want to hear what you have to say. So, I will get back with you in just a few minutes if you could bear with us.

Mr. BOWSHER. That would be fine, Mr. Chairman.

Chairman NUNN. Thank you.

[Recess.]

Chairman NUNN. We are still faced with the situation of having votes for the next 45 minutes, but they will be debated in between. I think we ought to hear the testimony, and then we will have questions. We will do the best we can with Senators rotating in and out. This is very important testimony, and I regret we are being interrupted, but I know our witnesses have enough experience with Capitol Hill to understand it.

The prepared statements of Senators Dixon, Warner, and Thurmond will be made a part of the hearing record at this time.

[The statements referred to follow:]

PREPARED STATEMENT OF SENATOR ALAN DIXON

It is a pleasure to have with us today the Hon. Charles A. Bowsher, the Comptroller General who heads the General Accounting Office, and his Assistant for National Security and International Affairs, Mr. Frank C. Conahan.

I look forward to hearing from them about the defense budget for fiscal years 1992 and 1993 and how it relates to what is necessary for a strong national defense posture. This discussion is very important in light of the changing threat to the United States and the reality of our budget constraints.

There are three areas I want to examine, areas which I think are critical to our national defense.

First, I want to look at force structure, especially as we draw down the force. I want to ensure there is enough emphasis on readiness, sustainability and support. We must make sure we do not end up with a hollow force.

Second, I want to look at our ability to move our forces in a crisis on short notice over long distances. Although our record in Operation Desert Shield/Desert Storm on the surface appears favorable, we must remember that most of our sealift was on foreign flag ships. We also must remember that the airlift was not forced to operate in a hostile environment.

Finally, I want to look at our industrial base. I understand we will not have many of our new major systems for quite a few years, though we are stopping production on many of our current systems. Will the industrial base be there when we go to the next generation of systems, or will most of the companies be out of business?

I look forward to the testimony of our distinguished guests.

Thank you, Mr. Chairman.

PREPARED STATEMENT OF SENATOR JOHN W. WARNER

Mr. Chairman, I want to welcome once again my friend, Comptroller General Bowsher, and Mr. Conahan, the Assistant for National Security and International Affairs. These gentlemen have provided valuable testimony to this committee over the past several years, and I look forward to their report today.

Last year, the Congress entered into an agreement with the administration which set deficit and spending targets for 5 years. Today, as the Senate debates the fiscal year 1992 budget resolution, amendments have been offered which attempt to open up the budget agreement we achieved last year. One of the principal benefits, in my view, of last year's budget summit agreement was the stability provided to the Department of Defense to plan future budgets at a predictable funding topline. I hope the Senate will reject these amendments and will work to that end.

At the appropriate time, I would like to hear Mr. Bowsher's views on the impact of stability in defense budgeting on DOD's planning and budgeting system.

PREPARED STATEMENT BY SENATOR STROM THURMOND

Thank you, Mr. Chairman: I join you in welcoming the Comptroller General, Mr. Bowsher. His reports to this committee are always eye-openers and the basis for a great deal of discussion.

Mr. Bowsher, I want to commend you and your staff for your dedication and responsiveness to this committee and the Congress. The reports prepared by you and your staff are essential to the conduct of our duties. They have, in many instances, resulted in substantial savings of our precious defense dollars and assured that the equipment we put in the hands of our soldiers are effective and safe.

Although, in some cases, your work stirs up controversy, I believe it is the type of work that must be done if we want to conduct the business of government in an efficient manner.

I join with my colleagues to thank you for your dedication to good government. Thank you Mr. Chairman.

Chairman NUNN. Mr. Bowsher, please proceed. Senator Warner is on his way.

STATEMENT OF HON. CHARLES A. BOWSHER, COMPTROLLER GENERAL, U.S. GENERAL ACCOUNTING OFFICE ACCOMPANIED BY FRANK C. CONAHAN, ASSISTANT COMPTROLLER GENERAL, NATIONAL SECURITY AND INTERNATIONAL AFFAIRS DIVISION

Mr. BOWSHER. Thank you very much, Mr. Chairman and members of the committee. We appreciate very much the opportunity to testify today before this committee and present GAO's views on the major defense budget and program issues facing Congress, the Department of Defense, and the Nation.

The dramatic changes that have occurred in the Soviet Union and Europe since 1989 have altered the threat to the U.S. national security. The transformation of this threat and the reality of budgetary constraints are the two principal forces driving needed changes in the defense program. These forces are linked because the prospect of a diminished threat provided the opportunity to trim the defense budget as part of the budget deficit compromise last August.

Mr. Chairman, in a series of speeches last year, you identified five shortcomings in the administration's 1991 defense budget and the 5-year defense plan. The deficiencies related to threat, money, strategy, force structure, and programs. In this testimony, I will address each of these five categories in an effort to point out choices made thus far by the administration and DOD and clarify the tough decisions that remain. I believe that it will demonstrate that much remains to be done to respond to the shortcomings you identified. But first I will briefly address the magnitude of the budgetary constraints facing the Nation.

In 1990, the consolidated budget deficit exceeded $220 billion, and it seems likely to reach $300 billion or more here in 1991. However, as I have noted on a number of occasions, these numbers understate the magnitude of the problem. The general fund deficit, namely, the deficit that excludes the surpluses of the Social Security and other trust funds, sailed through the $300 billion mark in 1990 and is headed toward $400 billion or more in 1991.

Senator **Exon**. May I ask a question right at that point?

Mr. **Bowsher**. Yes.

Senator **Exon**. This follows, I take it, Mr. Bowsher, the report that your organization made up at the request of Senator Grassley and myself.

Mr. **Bowsher**. That is correct.

Senator **Exon**. None of the figures have significantly changed since that report came out 6 months ago. Is that right?

Mr. **Bowsher**. That is basically right. In other words, the magnitude of the numbers are still the same. There have been slight changes, but very little.

This next point is very important. Interest on the public debt today—this is both the cash payouts and the accruals to the trust funds—rivals the defense budget, and next year for the first time we will be spending more on interest on the national debt than on the Nation's defense.

Senator **Smith**. Excuse me. What is that exact percentage? What is it? 19, 20?

Mr. **Bowsher**. We have it in dollars on a chart that is in the back of the statement, and what it really means is that the defense is slightly under $300 billion and interest now is going past $300 billion in dollars.

In your March 22, 1990 address to the Senate, Mr. Chairman, you stated that the threat to the U.S. national security, in light of recent changes in the Soviet Union and Eastern Europe, was undefined by the administration's 1991 proposal. But on August 2, 1990, at the Aspen Institute, the administration began to address the issue of the changing national security threat when the President stated that the world was less driven by an immediate threat to Europe and more by regional contingencies.

In response to the budget crisis and in recognition of the changes that have shaken the world over the last 2 years, the administration has proposed substantial changes in the defense budget. While both the administration and DOD have recognized the changed threat and described broad strategic objectives, it will take some time for detailed changes to threats and strategies to be incorporated into DOD's planning and programming. Because of the uncertainty of specific threats to U.S. interests that may emerge in the future, DOD's plans and programs will, to some extent, always be catching up to events. We reported in February. that DOD's traditional planning system may not be accommodating to the newly forming set of international relationships.

While DOD has submitted a future years defense program, still known as the FYDP, that is consistent with the administration's budget proposal, it still depends heavily on achieving about $172 billion in savings through future legislative action, management initiatives and program terminations. In other words, as much as you have the overall agreement, until you get the actual program terminations and the actions, you do not achieve these savings, and we are just pointing that out here that they total about $172 billion. Of this amount, we have already identified some savings that will not come to fruition due to program changes and revised estimates. Achieving the balance of these savings depends on a combination of congressional action and DOD's achievement of difficult tasks. To the extent that savings are not achieved, DOD will have to find other ways to stay within reduced budgets.

The President and the Secretary of Defense have now described broad strategic objectives for protecting U.S. interests in the new security environment. However, as always, the devil is in the details. For example, one strategic objective is to have the capability to respond to regional crises. A necessity in meeting this objective is having the lift capability necessary to move U.S. forces on short notice. Whereas in the Gulf crisis the United States was able to set its own timetable for the war, in future crises its adversaries may set the timetable. DOD, however, has been reluctant to spend the funds appropriated by Congress to expand sealift.

Frank was making a presentation to a group of consultants that we have at GAO just this afternoon before we came over here, and we were pointing out that in our visits to Europe all through the 1980's, the Army generals were pointing out, like General Otis, that that was one of their most serious concerns about where things stood. So, this is not a new issue. This is an issue I think that the military leaders have put on the table for some time. Having served in the Navy secretariat, I know that the Navy is very reluctant to spend money on ordinary sealift versus aircraft carriers and nuclear submarines. So, it is a tough issue, but it is one that I think this war highlights that really needs to be readdressed by the Congress.

Another strategic objective is the capability to rebuild U.S. forces should the Soviet Union's intentions again turn aggressive. The economic wellbeing of the U.S. defense industrial base, a key element in achieving this objective, is a particular concern of DOD. However, both DOD and the industry oppose instituting a financial reporting system that would provide an accurate gauge of the financial health of defense contractors. Such a system is essential to making informed decisions on maintaining the industry. In addition, we have reported that an improved approach to defense industrial base data collection and coordination, especially at the subcontractor levels of production, is necessary for DOD to properly plan and be in a position to take appropriate action regarding the industrial base.

A related question is how much of the defense budget should DOD commit to R&D. Today's research in new technologies leads to tomorrow's advanced weapons. However, the administration's request for R&D funding between fiscal years 1992 and 1995 reflects one of the largest proportional reductions of all the defense appropriations accounts.

Regarding basic research, despite congressional guidance to establish a 2 percent real increase in funding, the Congressional Budget Office testified recently that the administration proposal for basic research and exploratory development would actually decrease in real terms by about 6 percent in 1992 and remain at that lower level in 1993.

With regard to force structure, the administration's 1992 budget proposal and its new FYDP continue the process of downsizing the military. However, the proposed active force at the end of fiscal year 1995 is 40,000 higher than authorized in the 1991 Defense Authorization Act. DOD will have to seek a change in its authorized end strength if it desires to maintain active forces at the higher level. It has already obtained authorization to exceed the levels authorized for 1991 in recognition of the need to retain personnel beyond their scheduled separation dates during the Persian Gulf crisis.

While DOD plans to reduce the number of organizational units such as Army divisions and Air Force tactical air wings, it is not clear whether force structure reductions have been based simply on budgetary conditions or an in-depth evaluation of the threat, risk, roles, missions, and functions. In addition to eliminating organizational units, it is essential to reevaluate functions as well. For example, DOD needs to examine the feasibility of continuing with both the Army's and the Marine Corp's light forces and the Army's and the Air Force's provision of close air support that may not be affordable in today's tight budgetary environment. In other words, we are raising the issue, if you have to come down in force levels, looking for duplication in some areas is one issue that the committee ought to consider.

Regarding total force policy, the Army's failure to deploy its National Guard combat battalions to the Gulf has been used as evidence that the total force policy does not work and should be abandoned. We do not agree with that assessment and, in fact, we believe that the Gulf war has in some ways shown the wisdom of this policy. First, the fact that reserves were called from virtually every State went a long way toward building the public support so essential to the successful conduct of the war. Second, it showed that defense needs can be met at reduced costs by effectively integrating active and reserve forces, civilians and host nation personnel.

This is not to say that the implementation of the total force policy has been perfect. Our assessment is that the basic principles of the total force policy are sound, but that weaknesses in program management and internal controls, as well as a lack of adherence to stated priorities, have prevented DOD from fully achieving the aims of the policy. If the total force policy is to work, DOD must be more realistic in assigning roles to the reserves, given their part-time status. It should also take a hard look in how it can overcome past shortcomings in preparing reservists to carry out their missions. Finally, it needs to reexamine how it sets priorities for equipment, personnel, and training in peacetime to ensure that those forces it depends on to sustain combat operations can be quickly readied to deploy.

Solutions do not necessarily require increased funding. With the planned downsizing of the military forces, the answers may lie in a reallocation and reprioritization of existing resources. Improved program implementation and internal controls could enhance the prospects for effective implementation of the total force policy.

On programs, DOD has completed its major aircraft and warship review, but it has yet to comprehensively reexamine all the weapon programs to decide which weapons systems are still necessary in light of the change in Soviet intentions. While these changes are having an impact on the level of U.S. forces, they have apparently had only a limited impact on the determination of which weapons DOD procures.

In addition, DOD needs to examine how much concurrency it needs in weapons programs given the greater warning time for a major conflict in Europe that it has today. The 1980s was a decade of concurrency in weapons procurement. The advanced medium range air-to-air missile, AMRAAM, and the B-1 bomber are classic examples of weapons whose productions started before the systems' designs had stabilized and their performance and reliability have been clearly demonstrated, resulting in lingering concerns about their reliability.

We believe that budgetary pressures and the increased lead time available for responding to a security threat in Europe should move DOD to moderate their concurrency in existing and future weapons programs whose requirements stem from a conflict with the Soviets. However, the B-2 bomber is an example of the DOD's failure to moderate concurrency. According to DOD's schedule for the program, DOD will have contracted for almost half the planned B-2 fleet and almost four-fifths of the program's anticipated total cost will have been appropriated before DOD has completed testing and established that the bomber can achieve its mission.

In assessing the performance of our weapons during the Gulf war, we need to keep three things in mind. First, the threat the United States was not as sophisticated as the threat that the weapons were designed to counter. Second, the services were able to deploy many mature weapons that had been fully tested and improved upon. And third, during the Gulf war, the services were able to provide maximum support for those weapons, which they might not be able to do in an all-out war in Europe.

For example, while the Air Force deployed about one-fifth of the tactical combat aircraft into the Gulf, it deployed four-fifths of the aircraft logistical support. And we have no criticism of doing that. We are just pointing out that they did have tremendous support brought in, and in this war they were able to do just that.

How well individual weapons worked during the war is now the subject of extensive evaluation, the results of which will not be available for some time. I would caution against jumping to conclusions about the prowess of the individual systems until the full results are known.

On the other issues, there are really two main issues I would like to discuss that deal with managing DOD, particularly the high risk areas of defense acquisition and inventory management. I would also like to touch on the issue of financial management at DOD.

The Secretary of Defense's July 1989 defense management report, the DMR, to the President has resulted in numerous well-intended actions to improve the performance of the defense acquisition system. Nevertheless, the events leading to the cancellation of the A-12 aircraft last January are the latest example that makes us ask whether DMR-related initiatives can really alter the culture of optimism that is part of the defense acquisition process.

I would like to briefly address inventory management. In testimonies last year, we highlighted longstanding problems of excessive inventory and limited control. Although DOD reported that it had $34 billion in unneeded inventory last year, work we have underway indicates that the size of the inventory and the magnitude of the problem are even greater than previously reported.

We have reported over the last 20 years on many specific problems in the inventory system. Our recent reviews reveal the same problems over and over again. We believe that to solve these problems, DOD needs to emphasize economy, efficiency, and accountability in the inventory system. DOD often buys more than it needs and does not maintain accurate records on its stock in storage or in transit. Although many efforts under DOD's inventory reduction plan and DMR initiatives are underway to address the extensive problems that DOD faces in managing its inventory system, we are concerned about whether these efforts will adequately address the problems of inventory visibility, accuracy, and accountability.

And on financial management, DOD needs reliable, responsive financial management systems that can provide timely information. I think one illustration of that need, of course, is with the war here trying to figure out how much it really is costing. We are having a fair amount of trouble in some of the services in getting accurate information. However, our audits of the Air Force and other services have revealed serious shortcomings in their financial systems' ability to provide the data needed to monitor operations sufficiently. Without good financial management systems, DOD cannot successfully implement planned improvements such as the defense business operations funds. This is where Secretary Cheney and Secretary Atwood are trying to bring all the stock funds and all the industrial funds together under one fund, which would mean a new fund of somewhere between $77 billion and $80 billion all in one operation. While the concept of that type of an approach might be valid, currently DOD does not have the financial systems in place to operate it as you would normally expect in an effective and efficient business type activity, which is what they are trying to achieve with that approach.

Mr. Chairman, that concludes my statement. We would be pleased to answer any questions.

[The prepared statement of Mr. Bowsher follows:]

PREPARED STATEMENT BY CHARLES A. BOWSHER, COMPTROLLER GENERAL OF THE UNITED STATES

Mr. Chairman and members of the committee: I appreciate the opportunity to testify today before this committee and present GAO's views on the major defense budget and program issues facing Congress, the Department of Defense (DOD), and the Nation. The dramatic changes that have occurred in the Soviet Union and Europe since 1989 have altered the threat to U.S. national security. The transformation of this threat and the reality of budgetary constraints are the two principal forces driving needed changes in the defense program. These forces are linked because the prospect of a diminished threat provides the opportunity to trim the defense budget as part of the budget deficit compromise.

Now, with Operation Desert Shield over and Operation Desert Storm drawing to a close, DOD is again turning to the task of building down the defense establishment. This task will require difficult decisions by Congress and DOD to ensure that during the build-down our limited defense dollars are spent wisely and our military strength is preserved.

In a series of speeches last year, Mr. Chairman, you identified five shortcomings in the administration's 1991 defense budget and the Five Year Defense Plan. These shortcomings related to threat, money, strategy, force structure, and programs. You referred to these shortcomings to illustrate the 1991 defense budget's and the Five Year Defense Plan's failure to (1) address how the changes in the Soviet Union and Eastern Europe would affect the threat to the United States, (2) suggest a strategy to respond to these changes, and (3) point out DOD's choices as it sought to bring future spending in line with the administration's own budget.

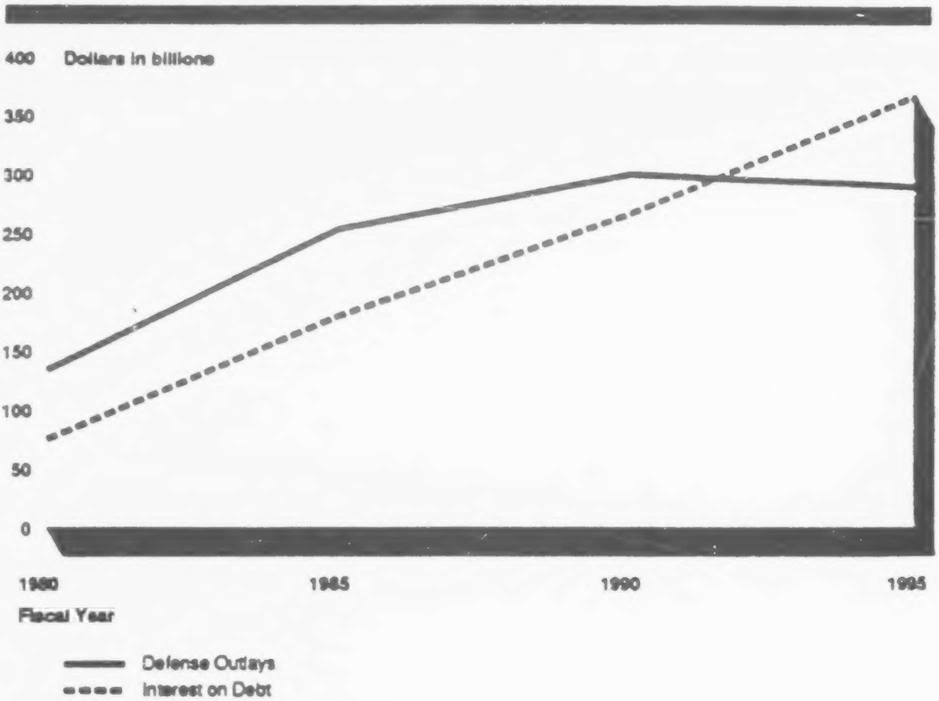
In this testimony, I will address each of these shortcomings in an effort to point out choices made thus far by DOD and to clarify the tough decisions that remain. But first, I will briefly address the magnitude of the budgetary constraints facing the Nation.

OVERVIEW

In 1990, the consolidated budget deficit exceeded $220 billion, and it seems likely to reach $300 billion or more in 1991. However, as I have noted on a number of occasions, these numbers understate the magnitude of the problem. The general fund deficit—excluding the surpluses in the Social Security and other trust funds—sailed through the $300 billion mark in 1990 and is headed toward $400 billion or more in 1991.

Interest on the public debt today rivals the defense budget. Next year, for the first time, we will be spending more on interest on the national debt than we will be spending on the Nation's defense. Interest will total about $312 billion, according to the Congressional Budget Office (CBO), while the administration is proposing defense outlays of $295 billion. (See Figure 1.)

Figure 1: Comparison of Defense Outlays and Interest on Public Debt



In response to the budget crisis and in recognition of the changes that have shaken the world over the last 2 years, the administration has proposed substantial changes in the defense budget. While both the administration and DOD have recognized the changed threat and described broad strategic objectives, it will take some time for detailed changes to threats and strategies to be incorporated into DOD's planning and programming. Because of the uncertainty of specific threats to U.S. interests that may emerge in the future, DOD's plans and programs will to some extent always be catching up to events. We reported in February that DOD's traditional planning system may not be accommodating to the newly forming set of international relationships.

While DOD has to reduce the number of organizational units, such as Army divisions and Air Force tactical air wings, it is not clear whether force structure reductions have been based simply on budgetary conditions or on in-depth evaluations of threat, risk, roles, missions, and functions. In addition to eliminating organizational units, it is essential to reevaluate functions as well. For example, DOD needs to examine the feasibility of continuing both the Army's and Marine Corps' light forces and the Army's and Air Force's provision of close air support that may not be affordable in today's tight budgetary environment.

While DOD has submitted a Future Years Defense Program (FYDP) that is consistent with the administration's budget proposal, it still depends heavily on achieving about $172 billion in savings through future legislative action, management initiatives, and program terminations. Of this amount, we have already identified some savings that will not come to fruition due to program changes and revised estimates. To the extent that savings are not achieved, DOD will have to find other ways to stay within reduced budgets.

will elaborate on these and other issues that must be addressed in my assessment of the choices already made and yet to be made in responding to the five shortcomings you described. However, before proceeding, I would like to note that during the Gulf war, the world watched as our forces mounted a very successful campaign and much has been said about the performance of our weapons. Even so, in assessing the performance of our weapons during the war we need to keep three things in mind. First, the threat the United States faced was not as sophisticated as the threat that the weapons were designed to counter. Second, the services were able to deploy many mature weapons that had been fully tested and improved on. Third, the services were able to provide maximum support for those weapons, which they might not be able to provide in an all-out war in Europe. For example, while the Air Force deployed about one-fifth of its tactical combat aircraft to the Gulf, it deployed four-fifths of its aircraft logistical support. How well individual weapons worked during the war is now the subject of extensive evaluation, the results of which will not be available for some time.

THE THREAT ISSUE

The order of my treatment of the shortcomings is not accidental. I begin with the threat, followed by the dollar issue, because these two factors are the shaping forces of U.S. military strategy—the third issue to be addressed. Mr. Chairman, in your March 22, 1990, address to the Senate, you stated that the administration's 1991 budget proposal had not defined the current and future threats to our national security (in light of the recent changes in the Soviet Union and Eastern Europe).

The administration has now acknowledged the changed threat. On August 2, 1990, at the Aspen Institute, the President stated that the world was less driven by an immediate threat to Europe and more driven by regional contingencies. He also emphasized the importance of not ignoring the enduring reality of the Soviet strategic threat and the corresponding requirement to maintain our strategic deterrence. The Secretary of Defense has since elaborated on this position, stating that the threat of massive conventional war in Europe, the major focus of our defense planning for 40 years, has declined substantially and that regional contingencies with well-armed adversaries have emerged as the most immediate threat to U.S. interests.

DOD also recognizes, of course, that the Soviet Union continues to have the most formidable military capability of concern to the United States. While the change in Soviet intentions and its capability to launch a conventional ground war in Europe has permitted DOD to propose a reduction in the defense establishment, a resurgent Soviet military would prompt a reassessment of the Nation's defense posture, with important implications for future defense budgets.

THE DOLLAR ISSUE

In your March 22, 1990, remarks you pointed out that DOD had not identified enough budget cuts to bring the Pentagon's spending in line with the 5-year targets for national defense the administration included in the 1991 budget. DOD has since submitted a FYDP that is consistent with the 1992 budget, but maintaining this consistency depends heavily on achieving substantial savings that may or may not materialize.

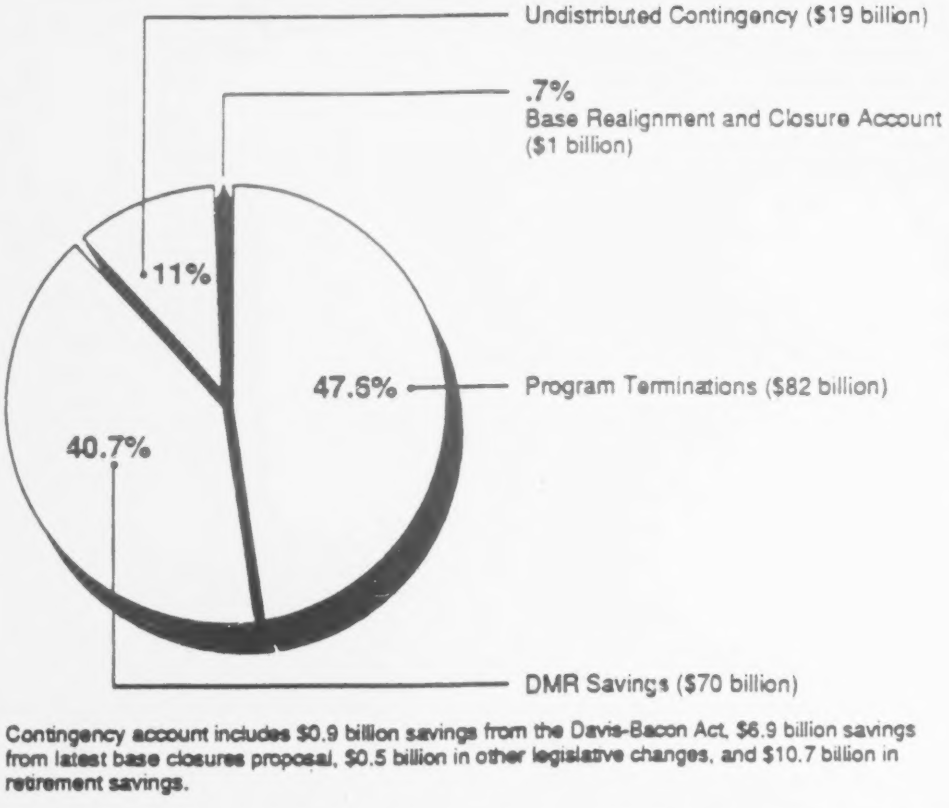
The Budget and the FYDP Assume Significant Savings

In previous testimony before this committee, I stated that since the mid-1980s DOD's 5-year defense planning had been fiscally unrealistic—planned spending levels greatly exceeded actual appropriations. Specifically, unrealistic planning provided an unclear picture of defense priorities because it did not include tough decisions and trade-offs. Specific dollar amounts by which the DOD budget would be reduced were not matched with an indication of where the reductions would be made.

In developing the 1992-1997 FYDP, DOD has done much to rectify these shortcomings. However, a new problem has emerged in the form of a heavy reliance on achieving substantial savings to stay within the budget totals while achieving defense objectives.

The 1992-1997 FYDP incorporates many difficult decisions and is consistent with the President's budget. However, it includes about $172 billion in anticipated savings and reductions that may not fully occur. These anticipated savings and reductions depend on a combination of congressional action and DOD's achievement of difficult tasks. They include (1) about $82 billion in reductions resulting from major program terminations, including about $10 billion in fiscal year 1992; (2) about $70 billion in anticipated savings resulting from a number of initiatives identified as part of the Defense Management Review; (3) about $19 billion in anticipated savings expected primarily from proposed legislative changes, including savings from base closures proposed April 12; and (4) about $1 billion resulting from the base closures and realignments that occurred in 1988. (See Figure 2.)

Figure 2: Breakdown of the $172 Billion In Savings and Reductions Contained in the FYDP (Fiscal Years 1992-97)



Contingency account includes $0.9 billion savings from the Davis-Bacon Act, $6.9 billion savings from latest base closures proposal, $0.5 billion in other legislative changes, and $10.7 billion in retirement savings.

Regarding program terminations, Congress has not always agreed with what DOD has proposed to terminate. For instance, Congress and DOD did not agree in the cases of the F-14 and V-22 aircraft. Regarding the Defense Management Review (DMR) savings, as with any new initiative, it remains to be seen whether all these anticipated savings will be achieved. We reported in December 1990 that most of the savings estimates identified in the DMR had been based primarily on management judgments and were not supported by historical facts or empirical cost data. Since that time, DOD has indicated that about $3.3 billion in originally anticipated savings will not be achieved between fiscal years 1991 and 1995 because of various program changes. To the extent that the anticipated savings do not fully materialize, DOD will have to identify reductions in other programs.

Regarding base closures, much of the savings projected in the FYDP from the base closures are not likely to occur. When the FYDP was submitted to the Congress in February, prior to finalizing the base closure cost estimates, it projected that it would cost $600 million to close the bases and that savings would amount to $6.9 billion, for a net savings of $6.3 billion. However, DOD's April 12 base closure report estimated that it would cost $5.7 billion between fiscal years 1992–1997 to close the bases while savings from reduced operating costs during the same period would be $6.5 billion, for a net savings of $800 million. Consequently, the FYDP overstates base closure savings by $5.5 billion.

How Much of the Burden Should Our Allies Share?

In addressing the dollar issue, we must determine the extent to which our allies should share the burden of maintaining U.S. forces overseas. The Secretary of Defense and the Chairman of the Joint Chiefs of Staff have implied in testimonies and speeches that it is in the U.S. interest to maintain a forward presence in key places around the world to serve as both a deterrent to any aggression and as a means of responding quickly to regional crises. Having a U.S. forward presence also benefits our allies, as was most recently demonstrated in the Gulf.

The United States, even with a reduced defense budget, spends considerably more on defense than does any of our major allies. For example, the United States outspent Japan and Germany together by about $257 billion in 1989, the latest year for which comparable data were available. In 1989, the United States spent 5.9 percent of its national output on defense; Germany spent 2.9 percent; and Japan spent 1.0 percent.

The planned force drawdowns in Europe and the Pacific will reduce defense outlays; however, significant costs will continue to be incurred to keep reduced forces there. The issue of equitable cost-sharing for the U.S. presence has been a sore point in relations with U.S. allies, and we expect that it will continue to be contentious for at least two reasons. First, while a reduced Soviet threat will no doubt translate into lower defense expenditures for North Atlantic Treaty Organization (NATO) countries, Operations Desert Shield and Desert Storm demonstrate that common defense is not limited to the borders of NATO countries. Second, the United States is the only country among the allies capable of projecting the military power needed to deter or defeat aggression.

THE STRATEGY ISSUE

In your March 22, 1990, remarks you stated that the administration had not yet developed a new military strategy than responded to the change in threat. The President, in his speech in Aspen, Colorado, and the Secretary of Defense, in speeches, testimonies, and reports, have now described broad strategic objectives for protecting U.S. interests in the new security environment. These objectives include: (1) preserving strong strategic offensive and defensive capabilities, (2) maintaining a forward presence, (3) retaining the capability to respond to regional crises, and (4) retaining the capability to reconstitute our forces should a major reversal in Soviet intentions occur. While these broad objectives provide a basis for developing a detailed national defense strategy, many questions need to be answered, and many decisions need to be made. For example, to be able to reconstitute our forces, what procurement strategies should we pursue to preserve a strong defense industrial base, and how much of the defense budget should we commit to research and development?

Strategic Deterrence

As the President and the Secretary of Defense have said, the Soviet Union is the only country capable of destroying the United States. We must, therefore, continue to maintain a credible nuclear capability to deter nuclear attack. We must also be prepared to respond to lesser nuclear threats from the Soviet Union and other adversaries that may emerge in the future.

Maintaining a Forward Presence

Although the United States will decrease its forward presence as a result of the drawdown of forces in Europe, DOD plans to continue to maintain a forward presence in Europe and the Pacific. There will also be a new dimension to forward presence as the United States enhances its presence in the Middle East. This presence need not include an extensive stationing of troops in the area; rather, it could entail prepositioning equipment on either land or sea, conducting joint exercises with Gulf countries, and maintaining a military infrastructure.

Regardless of the implementation of the Conventional Forces in Europe (CFE) treaty, the level of U.S. forces in Europe is expected to significantly decrease during this decade. The administration has indicated that, because of budget constraints, it is seeking to reduce the number of troops in Europe below the 225,000 proposed by the President in January 1990. The Soviet Union also appears to be drawing down its forces in Central Europe, with more reductions likely in the future. Data DOD has recently released on Atlantic forces suggests that by the middle of this decade U.S. forces in Europe could number about 130,000.

Regarding forces in the Pacific, some significant movement toward force reduction is occurring. DOD has begun to withdraw more than 15,000 personnel from the region, a process scheduled for completion by December 31, 1992. Further reductions are under consideration. Because outside of the Korean peninsula there are no well-defined threats to U.S. interests, the size of U.S. forward presence necessary to maintain regional stability is subject to debate.

Responding to Regional Crises

An uncertain world will require highly mobile forces that remain in a high state of readiness and capable of responding to crises on short notice.

The Need to Control Arms Transfers

U.S. forces involved in regional conflicts around the world will face well-armed foreign forces. These encounters will present difficult operational and sometimes conflicting policy issues as evidenced by the allies' experiences in the Gulf. The Iraqi forces had been built up over the years with weapons and supplies obtained from many sources, including the sale of high technology weapons from U.S. allies. Because of these sales, there was a strong potential for our Armed Forces to face Western weaponry and technology.

On the other hand, pressure to sell arms to other countries continues even now because of supplier countries' needs to support their defense industrial bases. The easing of tensions in Europe, as well as reduced defense budgets, will result in greater competition in a shrinking world arms market—largely involving unstable Third World countries. While arms sales are important to the U.S. defense industrial base during these times, the administration needs to be vigilant in monitoring the national and regional security implications of U.S. arms and technology transfers. A well-thought-out balance must be struck among these sometimes competing interests.

The Importance of Lift Capability

Over the past several years, DOD has not been responsive to congressional direction to expand sealift capability. In fiscal years 1988–1990, for example, DOD used almost half of the sealift funding provided by Congress for other programs. DOD has thus far not definitized any plans to spend the additional $900 million Congress added for sealift in its fiscal year 1991 appropriation. It is also uncertain how DOD would invest additional sealift funds in the wake of the Gulf experience.

DOD is attempting to modernize its airlift fleet through the development and purchase of the C–17 aircraft. This aircraft would replace the aging C–141. However, our work on the C–17 has raised questions about whether it can be produced on schedule and meet its performance goals. Due to schedule and performance problems involving the C–17, it may be necessary to keep the C–141 in the inventory longer than planned.

The Gulf crisis demonstrated that lift capability is critical to military response in regional conflicts. While a large number of troops were moved quickly to the Gulf by air, it took months to move by sea the large quantities of material necessary for Operations Desert Shield and Desert Storm. In looking at the lessons learned in the Gulf, DOD needs to look at the major factors that affected the amount of time it took to deploy our forces and what these factors mean for setting funding priorities in the 1990s. We suspect that such analyses would question the historically low priority given to sealift.

Rebuilding U.S. Forces

A key element of the new U.S. strategy is the ability to rebuild U.S. forces should the Soviet threat reemerge. Recent events have lengthened the warning time for a major conflict in Europe substantially from the 14 days anticipated during the Cold War. This increased lead time has important implications for our weapons acquisitions strategy, our defense industrial base, and the role of research.

Acquisition Strategy

The 1980s was the decade of concurrency in weapons procurement. We have reported that DOD increased the risk of not achieving program objectives for some weapons by contracting for too much production before adequately demonstrating that the weapons would perform as intended. The Advanced Medium Range Air-to-Air Missile (AMRAAM) and the B-1 bomber are classic examples of weapons whose production started before the systems' designs had stabilized and their performance and reliability had been clearly demonstrated. As a result, the systems have undergone numerous design changes and multiple mission configurations, and there have been lingering concerns about their reliability.

We believe that budgetary pressures and the increased lead time available for responding to a security threat in Europe should move DOD to moderate concurrency in existing and future weapons programs whose requirements stem from a conflict with the Soviets. Planned production commitments need to be delayed or maintained at very low levels until assurances are obtained that the systems will perform as intended. DOD has policies and procedures to deal with excessive concurrency; the solution to concurrency problems lies with better and more disciplined implementation of these policies and procedures. However, the B-2 bomber is an example of DOD's failure to moderate concurrency. According to DOD's schedule for the program, DOD will have contracted for almost half she planned B-2 fleet and almost four-fifths of the program's anticipated total cost will have been appropriated before DOD has completed testing and established that the bomber can achieve its mission.

The Defense Industrial Base

A major component in the ability to rebuild U.S. forces is ensuring adequate defense industrial capability. In particular, DOD has expressed concern about U.S. production capacity. As the military is downsized and procurement needs are reduced accordingly, defense contractors will face difficult times.

There are, however, steps that DOD has not taken to address its concerns with the industrial base. For example, 3 years ago, Congress enacted legislation requiring DOD to develop (1) an integrated financing plan and (2) a plan for developing the technologies critical to defense. DOD has not fully developed an integrated financing plan and has done little to ensure that its policies are structured to meet its long-term needs for industrial resources and technological innovation as required by the legislation. As you know, your Subcommittee on Industry and Technology is planning hearings that will address DOD's failure to respond properly to the mandate for an integrated financing plan. We will be providing testimony outlining the steps necessary to produce a more meaningful integrated financing plan. Regarding the critical technologies plans, DOD has not fully described how the goals for each critical technology are to be achieved.

The defense industry claims that in 1984 a series of statutory, regulatory, and managerial changes began to adversely affect its financial viability. These changes include lower progress payments, faster tax payments, and the greater use of fixed-price contracts for developmental efforts. The defense industry maintains that, as a result, more investment is necessary to perform defense contracts and the profitability of defense firms has not kept pace with the rest of industry.

Financial data specific to the segments of a company that perform government work are needed to accurately establish reasonable levels of profitability for government contractors. However, such data are generally not publicly available. A financial reporting system that accurately measures defense contractors' profitability would require government contractors to annually report segment-level financial data. This information would enable policy-makers to evaluate the financial health of the defense industry and the need to revise DOD's policies. However, DOD and industry oppose such a system.

In addition, we have reported that an improved approach to defense industrial base data collection and coordination, especially at the subcontractor levels of production, is necessary for DOD to properly plan and be in a position to take appropriate action regarding the industrial base. Such efforts need to take into account, for example, the economic, trade, and technology security implications of procuring items and components of major weapons systems from foreign sources.

Congress and the administration will have to make difficult decisions about maintaining a strong defense industrial base. For example, should DOD procure weapons it might not need, such as more tanks, simply to keep capacity available? Should small quantities of many systems be procured to keep contractors in business? Further, how much additional costs should DOD incur to maintain competition through multiple production sources? To what extent should DOD rely on off-the-shelf civilian technology to meet its needs? Should the United States take steps to ensure that dependencies on foreign suppliers for critical weapons components such as computer chips will not pose a threat to national security? What is DOD's industrial and technological strategy to guide the build down and ensure that DOD decisions and industry adjustments relating to budget cutbacks result in an overall capability that meets our defense needs?

Maintaining a Vigorous Research Program

In his Aspen speech the President emphasized the importance of active and inventive defense research and development. This committee has also been urging DOD to be more aggressive in emphasizing research and development. There is a strong relationship between today's research in new technologies and tomorrow's advanced weapons. However, the administration's request for research, development, test, and evaluation (RDT&E) funding between fiscal years 1992 and 1995 reflects a decline in support for research. Measured in 1990 dollars, RDT&E funding would receive one of the largest proportional reductions of all the defense appropriations accounts. Fiscal year 1992 RDT&E funding being requested represents a real increase of only 1 percent over 1990s funding. Moreover, much of that 1 percent growth reflects increased funding for the Strategic Defense Initiative. By 1995 real funding would be 16 percent below its 1990 level.

CBO recently testified that, despite congressional guidance to establish a 2-percent real increase in basic research, the administration did not propose real increases in funding for the technology base in either 1992 or 1993. In fact, CBO stated that funds for basic research and exploratory development would actually decrease in real terms by about 6 percent in 1992 and remain at that lower level in 1993. This decrease raises serious questions about the extent of DOD's commitment to research and development.

In addition to research and development sponsored by DOD, research and development work that defense contractors undertake on their own initiative, known as independent research and development (IR&D) is an important part of this country's effort to remain a leader in new technologies. As you know, Mr. Chairman, last year this committee sponsored legislation designed to promote IR&D efforts that focus on critical technologies, environmental issues, and the industrial base. Implementation of this legislation presents DOD with an opportunity to expand significantly its support for industry efforts in these areas.

FORCE STRUCTURE ISSUES

Force structure was another shortcoming you identified in the 1991 defense budget. You noted that DOD had not indicated what the size and structure of U.S. military forces would be over the next 5 years. The administration's 1992 budget proposal and its new FYDP continue the process of downsizing our military. Using as a base the 1990 budget (which was the last Cold War budget), the administration proposes a 20-percent reduction in the personnel level of our Active Armed Forces by the end of fiscal year 1995.

The proposed active force level at the end of fiscal year 1995, however, is 40,000 troops higher than the end strength authorized for that year in the 1991 Defense Authorization Act. DOD will have to seek a change in its 1995 end strength authorization if it desires to maintain active forces at the higher level. It has already obtained authorization to exceed the levels authorized for 1991 in recognition of the need to retain personnel beyond their scheduled separation dates during the Persian Gulf crisis.

In terms of force structure, DOD has proposed dramatic reductions in the Army and the Air Force. Both Army and Air Force active units would be cut by at least one-third, principally reflecting the reduced European threat. Army reserve units would proportionately be reduced even more; Air Force reserve units, however, only minimally. The active Navy would receive the smallest reduction, reflecting the continuing importance placed on seapower.

While DOD is shrinking the force, it has still not come to grips with some difficult decisions. These include how to eliminate overlap in the military services' functions and how to reassess the total force policy.

Overlap in Functions

DOD allows different services to perform the same functions. We have found at least two instances in which there are overlaps. One is in the Army's and Marine Corps' light forces. The other is in the Army's and Air Force's provision of close air support. In light of the changes in threat and strategy, DOD needs to rethink and prioritize the services' functions as well as reduce their size.

While both the Army and the Marine Corps have some unique capabilities, there is considerable overlap in their functions and in the way they have been used in conflicts. While the Marines have traditionally been viewed as a light, rapid response force, the Army also possesses significant light, rapid response capability. While the Marines have a unique amphibious capability, it only has the resources necessary to allow one-third of its combat forces to mount amphibious operations. The remaining two-thirds may be viewed as a land force because, like the Army, it does not rely on amphibious assault but, rather, is deployed to secured areas by aircraft or ships. In practice, in Grenada, Panama, and most recently in the Gulf, Army and Marine light infantry forces have been used similarly.

There are also important similarities in the functions of the Air Force's and Army's provision of close support. Essentially, both services support ground force commanders by attacking enemy forces both in proximity to friendly forces and well behind enemy lines.

The Air Force provides close air support with fixed-wing aircraft that can cover large portions of the battlefield relatively rapidly. These aircraft can also be used for deeper strikes against enemy forces before they are in direct contact with friendly forces. Army attack helicopters can also engage enemy forces with deep strikes or engage enemy forces in the close battle. The Army also provides support to ground forces with such systems as artillery and short- and medium-range surface-to-surface missiles. These systems have more limited range in covering the battlefield than the fixed-wing aircraft, although the Army is increasing their range and accuracy, but offer other advantages.

Although these systems offer diverse capabilities, they provide overlapping support. Because many of them are capable of destroying the same targets in proximity to friendly ground forces, DOD needs to consider whether these systems and functions complement or unnecessarily duplicate each other.

Reassessing the Total Force Policy

The Army's failure to deploy its National Guard combat battalions to the Gulf war has been extensively debated as evidence that the Total Force Policy does not work and should be abandoned. We do not agree with this assessment and, in fact, we believe that the Gulf war has in some ways shown the wisdom of this policy.

First, the fact that reserves were called from virtually every State went a long way toward building the public support so essential to the successful conduct of the war. Second, it showed that U.S. security interests can be met at reduced costs by effectively integrating Active and Reserve forces, civilians, and host nation personnel.

This is not to say that implementation of the Total Force Policy has been perfect. Our assessment is that the basic principles of the Total Force Policy are sound but that weaknesses in program management and internal controls, as well as a lack of adherence to stated priorities have prevented DOD from fully achieving the aims of the policy. For example, a basic principle is that warfighting roles are to be assigned to the reserves only if there is a reasonable expectation that they can be readied to deploy within the expected timeframes. While this worked in the case of the Air Force, the extensive pre-deployment training that the Army needed to provide its brigade-size combat reserves leaves reason to doubt whether assigning these troops early deployment missions was a judicious policy.

The Army's lack of confidence in the readiness of reserve combat troops points to major deficiencies in implementing a second key principle of the policy—namely, that training strategies should ensure that reservists are adequately prepared for their missions. Over the past 5 years, we have reported numerous systemic problems in training reserves that have hampered their readiness. These include limited available training time, uneven participation and administrative diversions associated with weekend drills, shortages of equipment on which to train, lagging equipment modernization, and insufficient collective and realistic training opportunities.

Finally, a third principle of the policy states that priority in staffing, equipping, and training should be given to those units that are expected to deploy first. In the Gulf war, it was reserve support forces—traditionally shortchanged in terms of personnel, equipment, and training in peacetime—who ironically were the first forces to be needed. Meanwhile, reserve combat units that received a high priority for resources prior to the war remained in training at its conclusion, never having been deployed.

If the Total Force Policy is to work, DOD needs to ensure that its implementation of the policy is consistent with the principles that the policy advances. First, it must be more realistic in assigning roles to the reserves. It simply may not be reasonable to expect reserve combat forces to be able to achieve the proficiencies required to operate at the 4000-soldier brigade on a part-time basis—particularly if they must deploy within the first 30 to 60 days of a contingency.

Second, it should take a hard look at how it can best overcome past shortcomings in preparing reservists to carry out their missions. Fundamental changes in its reserve training strategies are required if these troops are to be given a reasonable chance to show that they can effectively perform their missions. Finally, it needs to reexamine how it sets priorities for equipment, personnel, and training in peacetime to ensure that those forces it depends on to sustain combat operations can be quickly readied to deploy.

Solutions do not necessarily require increased funding. With the planned downsizing of military forces, the answers may lie in a reallocation and reprioritization of existing resources. Improved program implementation and internal controls could also enhance the future prospects for effective implementation of the Total Force Policy.

PROGRAM ISSUES

Mr. Chairman, the fifth shortcoming you identified concerned the billions of dollars requested in 1991 for weapons programs that were the subject of the major aircraft and warship reviews that were then underway. DOD has completed its review of these programs but has yet to comprehensively reexamine all its weapons programs to decide which weapons systems are still necessary in light of the changes in Soviet intentions. While these changes are having a significant impact on the level of U.S. forces, they have apparently had only a limited impact on the determination of which weapons DOD procures.

In 1990 DOD performed the comprehensive reevaluations of selected major aircraft and warship programs you referred to in your March 22, 1990, remarks. The reevaluations were limited to 8 of the approximately 100 major acquisition programs underway. The result of the aircraft review was a decision to reduce procurement by about $17 billion between 1991 and 1994 and delay the production of some new weapons—none were canceled at that time. The result of the warship review was a decision to reduce the annual production rate of the SSN-21 submarine and the DDG-51 destroyer.

The Defense Acquisition Board reviewed 24 programs in 1990. The Board examined these programs' developmental progress and studied the need for such systems. While these previews produced suggested program changes, no recommendations were made to terminate the program or substantially reduce their size. In reexamining the need for these systems, more attention is being given to regional threats. However, the threat driving the need is still viewed primarily in terms of Soviet technical capability. Changes in Soviet intentions, while having an impact on the level of U.S. forces, have apparently had only a limited impact on the determination of which weapons DOD procures. We are currently reviewing the extent to which the services reevaluate programs that are not subject to Board review.

To date, the termination of many major weapons programs have been confined to mature weapons nearing the end of their production cycles. For example, the administration plans to terminate production of the Trident submarine, the Bradley Fighting Vehicle, and the F-14, F-15E, and F-16 aircraft.

Terminations of new programs have generally been limited to those experiencing problems. Such programs include the A-12 and P-7 aircraft programs—both terminated for default as a result of non-performance by the contractors—and the Tacit Rainbow missile program, terminated as a result of technical and cost difficulties. However, the Navy already has a replacement development program for the A-12. While we agree that programs experiencing management and technical problems need to be thoroughly evaluated, we also believe that all programs need to be thoroughly reevaluated in terms of today's budgetary constraints and security needs.

OTHER ISSUES

There are several other issues I would like to discuss that deal with managing DOD, particularly with regard to what we have defined as high risk areas of defense acquisition and inventory management. I would also like to note the need for better financial management.

Defense Acquisition

The Secretary of Defense's July 1989 Defense Management Report (DMR) to the President has resulted in numerous well-intended actions to improve the performance of the defense acquisition system. Nevertheless, the events leading to the cancellation of the A-12 aircraft program last January again make us ask whether DMR-related initiatives can really alter the "culture of optimism" that is part of the defense acquisition process. The consequence of such a culture is program officials' and contractors' reluctance to bring accurate but critical information about a system's development to the attention of senior executives in DOD. In such situations, decisions about the acquisition of major defense systems are often based on overly optimistic information about cost, schedule, and performance. Four years ago we discussed this issue in reports on AMRAAM in much the same language that a Navy official used in his November 1990 report on the management of the A-12 program.

Internal Controls

We noted last May in a report on defense acquisition that a key element of effective management was the free flow of accurate information within organizations. Ensuring that such information is the best available is the job of an organization's internal control system. Without good internal controls, effective program oversight by management is especially difficult. The military services established three-tiered acquisition management structures that linked program managers with senior acquisition executives in a short chain of command. The three-tiered structure is intended to reduce the tendency of program managers to be program advocates and thereby increase the flow of realistic acquisition-related information to senior executives.

Despite this change, it may not be reasonable to expect that program management and program advocacy can be so neatly separated or that the culture of optimism will thereby be tempered by more realistic flows of information. Such separation didn't happen with the A-12. On the other hand, the cancellation of the A-12 program should have been a sobering and disciplining experience for everyone connected with defense acquisition, so perhaps there are grounds for another sort of optimism after all.

Inventory Management

In testimonies last year, we highlighted the long-standing problems of excessive inventory and limited control. Although DOD reported that it had $34 billion in unneeded inventory last year, work we currently have underway indicates that the size of the inventory and the magnitude of thee problems are much greater than previously reported.

We'ye reported over the last 20 years on many specific problems in the inventory system. Our recent and current reviews reveal the same problems over and over again. We believe that to solve these problems, DOD needs to emphasize economy, efficiency, and accountability in the inventory system. DOD often buys more than it needs and does not maintain accurate records on its stock in storage or in transit. Too frequently, these actions result in DOD's not knowing whether materials or parts have been stolen or just misplaced. There have been many instances in which items that have been recovered have never been reported as missing.

Although many efforts under DOD's Inventory Reduction Plan and DMR initiatives are underway to address the extensive problems that DOD faces in managing its inventory, we are concerned about whether these efforts will solve the extensive problems we see and, particularly, whether they will adequately address the problems of inventory visibility, accuracy, and accountability. For example, an Air Force plan to add a year of requirements to its Approved Force Acquisition Objective could serve to both mask inessential inventory and to increase acquisitions by preventing the cancellation of excess materials on order. We have recommended canceling the Air Force's plan, but DOD and the Air Force disagree.

Last year, we estimated a potential to reduce DOD's proposed 1991 funding for secondary items by at least $2 to $4 billion, and—following the invasion of Kuwait—the Congress reduced the funding request by over $2 billion. We believe the reductions were important, not only because they served to minimize unnecessary expenditures but also because they established a more reasonable base from which to measure later incremental costs incurred during the Desert Storm conflict. We are now following through on questions that arose since last year's hearings, including the impact of the Middle East crisis on the high risk area of inventory management.

Financial Management Systems

On November 15, 1990, the President signed into law the Chief Financial Officers Act of 1990, which establishes a leadership structure for improving financial management. DOD clearly needs reliable, responsive financial management systems that can provide timely information for use in managing programs and making difficult decisions during this period of shrinking budgetary resources and changing world threats. Our audits of the Air Force and other services have revealed serious shortcomings in their financial systems's ability to provide the data needed to monitor operations efficiently.

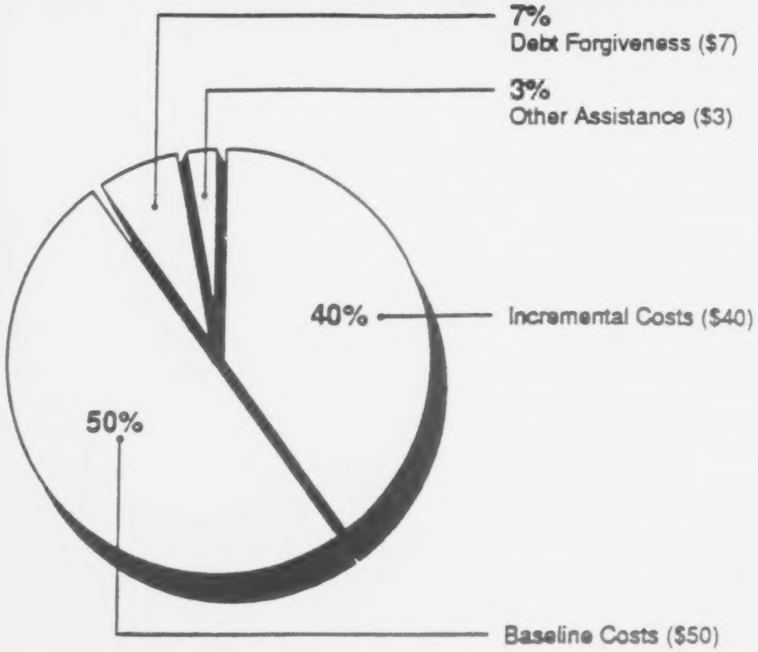
Without good financial management systems, DOD cannot successfully implement planned improvements. For example, DOD has proposed the establishment of the Defense Business Operations Fund to initially consolidate its industrial and stock fund operations into a single entity. DOD's long-range goal is to include all support activities, such as research and development and military construction, in the Fund. The Fund would provide services to DOD customers and be reimbursed from the customer's operations and maintenance funds. While we believe that the concept of the Fund might be valid, currently DOD does not have the financial systems in place to operate it as an effective and efficient business-type activity.

DOD recognizes that it has significant problems with its financial management systems and operations. It has made a "first step" toward improving its financial operations with the implementation of the DMR initiatives, particularly the Corporate Information Management initiative. However, much determination, tenacity, and long-term effort on the part of DOD's management are required to ensure that managerial improvements are achieved and that the DMR does not result in failure, as have many previous efforts. We urge the committee to both encourage and scrutinize DOD's progress in achieving financial reform.

THE COST OF OPERATIONS DESERT SHIELD AND DESERT STORM

We believe that the cost of Operations Desert Shield and Desert Storm will ultimately total as much as $100 billion for fiscal years 1990 and 1991. This includes about $50 billion that it cost the United States to raise, equip, and maintain the force that was deployed; $40 billion for the additional cost of mounting the Operations; and as much as $10 billion in other costs, including $7 billion in debt forgiveness for Egypt. (See Figure 3.) The allies, as of April 18, have contributed $35 billion. Assuming the outstanding pledges of $19 billion are ultimately received, allied contributions will have covered about half the war's cost.

Figure 3: Operation Desert Shield/Storm Costs



Dollars in Billions

Total = $100 billion

Mr. Chairman, this concludes my statement. I will be happy to respond to any questions.

Chairman NUNN. As predicted, we have a vote. Let me ask a couple of questions, and then I will go vote. I think Senator Exon will be heading back after he votes and probably Senator Warner.

Mr. BOWSHER. All right.

Chairman NUNN. We always focus on what the Department of Defense is doing wrong, and that is part of your job and part of our job. That is part of oversight, but if you listed three or four things they are doing right, what would they be?

Mr. BOWSHER. I think one of the great things that they were doing right, coming out of the middle 1970s when we had an Armed Forces with so many problems in the personnel area, is the improvement in personnel. These improvements include the recruiting, going to the all-volunteer force, and the training. When these tank crews went into battle, they really knew how to handle the tank. The gunner was well trained in how to fire that weapon.

When I first came into this office in the early 1980s, Frank and I would go over to Europe and visit some of the units. We would go up on the firing lines where the German civilians run the firing stations. These Germans would say you Americans spend so much money on equipment, and you end up dead last in all these contests. Even the Netherlands beat you. And in 1985 or 1986, that had totally turned around, and it turned around because we made an investment in training. In other words, we have started to buy simulators for these tank crews so they could really practice, not just once or twice a year. They really got trained in how to operate their weapons. While we had always made that investment, let's say, on pilots flying off an aircraft carrier, we had generally not made the investment in our enlisted men in many of our forces, and we started doing that in the 1980s. And I think that was a big factor in the success of this war.

So, I would say the recruiting, the training, and the handling of personnel has tremendously improved in the services.

Second, I really do believe they started to test some of these weapons and to make sure they worked, and a lot of weapons that were used over there came out of the Laird-Packard era. You had Dave Packard's influence on getting weapons that worked, like the F-16, the F-15, and the F-18. The basic planes that were flying, other than the new Stealth plane, had been in the inventory, had been proven out, and they could do their job. And I think that was an important feature and influenced how well it went.

I also give great credit to the leadership. In every war situation, you might get the right general to begin with and you might not if you look at our history. And I think President Bush was a very lucky man when he got General Schwarzkopf and the team that General Schwarzkopf put together. Obviously, they really knew what they were doing.

Chairman **Nunn**. I would list a lot of them in that category including General Horner who ran the air war——

Mr. **Bowsher**. I think that is correct.

Chairman **Nunn**.—and General Pagonis who——

Mr. **Bowsher**. Yes, he ran the logistics.

Chairman **Nunn**.—ran the logistics part of it. I am sure I could name many more, but I agree with you on that.

Mr. **Bowsher**. Let me also say that Frank has been over to Saudi Arabia, and one of the things that he kept hearing from some of the senior officers was how well the Goldwater-Nichols chain of command worked. And, Frank, maybe you would like to add a few words because I think this could be very important.

Mr. **Conahan**. I think without exception the commanders felt that that aspect of Goldwater-Nichols that did streamline the chain of command was very beneficial in the prosecution of the war. One of the service commanders over there told me that his service chief had not once intervened in the course of the prosecution of that campaign. So, I think that went very well.

I would like to add one other thing that has been done——

Senator **Warner**. Excuse me. Would you yield for a moment?

I think that started at the top with the President when he made a decision that here's the policy, and he gave the authority to the military to execute that policy.

Mr. **Conahan**. Absolutely, Senator.

Senator **Warner**. Mr. Bowsher, you and I having experienced an earlier conflict in which there was a great deal of micromanagement by a President. This is in sharp contrast. I would hope that you would comment on your own personal, on-the-scene experience in the late 1960s and early 1970s and contrast it with this.

Mr. **Bowsher**. I think you make a very good point, John, and that is that the leadership the President gave allowed the military to bring great force to bear. This approach made a lot of sense, and was different than the gradual approach that was used in the 1960s.

But at the same time, I think the point that Frank is making on the Goldwater-Nichols change was important. If you remember when we were there, it would be hard to believe that the CNO would not be out there finding out what was happening, maybe making a suggestion or two to some of the people, whereas in this situation what we are saying is that did not happen. The service chiefs stayed out of it.

Mr. **Conahan**. They permitted the theater commanders to do the job.

Mr. **Bowsher**. And so, I think that was a big contrast from when we were in the 1960s and 1970s. At that time there was still a holdover from the fact that the CNO used to run the Navy. And, by gosh, maybe they should still be running it.

Senator **Warner**. You are on record that they no longer run the Navy? [Laughter.]

Mr. **Bowsher**. Now you are going to get me into trouble.

Senator **Warner**. I think you better retract that statement.

But it is clear, as the Chairman said—indeed, the Chairman was the leader on the revisions of Goldwater-Nichols—that that statute was put to the test. And at some point in time, there may be some refinements that we could make to further improve and strengthen the goals as laid down in that law.

Mr. **Bowsher**. I agree with that. I really do.

Chairman **Nunn**. Let me just ask one other question.

Senator Warner, have you voted?

Senator **Warner**. No.

Chairman **Nunn**. Senator Exon has voted on this one. So, why don't I turn it over to Senator Exon for questions, and we will be back without interruption?

Mr. **Bowsher**. Fine.

Senator **Exon** [presiding]. Thank you, Mr. Chairman.

Mr. Bowsher, I listened with great interest. As you know, we have worked many, many years together, and I really appreciate the outstanding job that your organization has done over the years. I must say that while I have not agreed with all of your conclusions all of the time, which means that you are always right or maybe not right all of the time, I think you do an outstanding job over there. And I appreciate the fact that you have, if nothing else, great stability in the General Accounting Office, and you take a very close look at things. And things are judgment calls, of course.

But basically when it comes down to this budget deficit that is continually troubling to all of us, I was pleased to hear that we were basically on track with the most comprehensive and thoughtful report that you put out 6 months ago at the request of Senator Grassley and myself. That document did not receive as much publicity as I thought it would or should have, but oftentimes we digress from looking at what the total figure is and want to take a look at the smallest part of the picture or the smallest slice of the pie that is left without really coming to grips with how much of the pie is left. The fact of the matter is there is not very much.

I share your concern for the programs being advanced by the administration. We have been having hearings on many of them. It seems to me that we are on a course where while there is a lot of lip service given to the cuts that have to be made, there is very little, if any, cuts in major programs, the A-12 being one exception to the rule, but that was forced on the Department of Defense I suggest rather than having a rational approach. That should have been caught a long time before it was.

I would like to go and have you or Mr. Conahan, whichever would be appropriate, expand a little bit on your reference in your prepared statement with regard to the B-2 bomber. You say: "We believe that the budgetary pressures and the increased lead time available for responding to the security threat in Europe should move DOD to moderate concurrency in existing and future weapons programs whose requirements stem from the conflict with the Soviets. However, the B-2 bomber is an example of the DOD's failure to moderate concurrency."

Now, I want you to expand on that a little bit because with the hoops that the Armed Services Committee has insisted upon the B-2 bomber and its performance meeting or exceeding specifications as we go along the line, I thought we had a pretty fair handle on that.

I think it would be well to point out that I tend to agree with your statement I think shortly before the part that I just quoted with reference to the B-1. I think the B-1 was rushed into production very early, and we paid the price for that. I think that we can still, with some additional expenditures of money, rectify those problems that we have, and they are in the process of being rectified now. But, of course, it is going to cost some more money.

The facts of the matter are, though, I think it is fair to say, that the production of B-1 and the production of the B-2 are entirely two distinct and different types of production lines and operation. In other words, the B-2 bomber was built pretty much along the lines of previous bombers in that mock-ups were made and they rushed into production on them. One of the reasons that the B-2 has been as slow as it has—and it has been rather slow when you look at the fact that we have been working in this for about 11 years now—is the fact that most of the production equipment, especially the stealth part and others, have been built at a considerable expense up front. Therefore, I had felt that with some exceptions, the tests that are now being made, as far as to the reliability of the stealthiness, would give us an answer to that very, very important part of the B-2.

Now, my question is do you think that we are moving too fast on the B-2? Or could it be that we are not moving fast enough on the testing on the stealthiness of the aircraft, which after all is the key to this aircraft's success if it is going to play the role that it is designed to play in our nuclear deterrence in the future? Elaborate, if you can, what your major concerns are with regard to concurrency and lack of proper checks and balances on that B-2 program because we certainly do not want to repeat what we can now in hindsight recognize as mistakes in the B–1.

Do you think there is a parallel here, or have we done a better job with the B–2?

Mr. **Bowsher**. Well, I think you have done a better job on the B–2 probably starting last year when you did slow down the program to find out how well the testing was going. I think prior to last year's decision making, the B–2 was starting to have some of the similarities of the potential problems that you have in the B–1 simply because you were going to have a program that was going to be built before the testing had been accomplished.

We just issued a report on this, and as we say in this report, the first and second B–2s have flown about 133 total hours or 4 percent of the 3,600-hour flight test program. And the early block two tests, which are the ones they are currently doing, consisted of 13 hours of radar signature tests, which is 1 percent of the low observable testing plan. So, what we are pointing out here is that they have gotten into the testing program, but they are very much at the beginning and they have not proven out these systems yet.

So, our advice here is to do kind of what you were doing last year, and that is slow it down, get it tested, and then once you have proven it out, you can make the decision on how big of a production buy you want to go forward with. So, our concern is more one of continuing somewhat the thinking that was demonstrated by the Congress last year in slowing it down. I'm very concerned about the original B–2 program that was laid out because you would have run the same risk as the B–1. Because of last year's actions, I don't think you necessarily have a parallel program here.

Senator **Exon**. We don't have a parallel program.

Mr. **Bowsher**. You don't have a parallel program if you slow it down and do the testing.

Senator **Exon**. I am glad to hear you clarify that because without that clarification, I unfortunately read into your report that you thought we were——

Mr. **Bowsher**. Well, maybe what would be good—this is a very short report. We could have this inserted in the record.

Senator **Exon**. Let's insert that in the record at this point to clarify that.

Mr. **Bowsher**. Sure.

[The report referred to follows:]

United States General Accounting Office

GAO

Unclassified Summary to Congressional Committees

April 1991

B-2 BOMBER

Early Radar Signature Tests

GAO/NSIAD-91-188

GAO

United States
General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

B-243577

April 15, 1991

The Honorable Sam Nunn
Chairman, Committee on Armed Services
United States Senate

The Honorable Daniel K. Inouye
Chairman, Subcommittee on Defense
Committee on Appropriations
United States Senate

The Honorable Les Aspin
Chairman, Committee on Armed Services
House of Representatives

The Honorable John P. Murtha
Chairman, Subcommittee on Defense
Committee on Appropriations
House of Representatives

Section 113 of the fiscal year 1990/1991 Authorization Act requires us to review the Department of Defense's test reports and evaluation documents for the B-2 aircraft program and provide periodic reports on our findings to the Congress. This unclassified summary discusses our evaluation of early radar signature and flight worthiness testing of the B-2, known as early Block 2 flight testing.

Our objectives were to evaluate the adequacy, rigor, and realism of the tests; the tests' compliance with the full performance matrix; and the use of appropriate threat data. To accomplish our objectives, we reviewed documents and interviewed officials at the B-2 System Program Office, Wright-Patterson Air Force Base, Ohio, and the Departments of Defense and the Air Force, Washington, D.C. We performed our review from September 1990 to March 1991 in accordance with generally accepted government auditing standards.

We are sending copies of this summary to the Ranking Minority Members of your committees; other appropriate congressional committees; the Secretaries of Defense and the Air Force; and the Director, Office of Management and Budget. We will also make copies available to others.

This summary was prepared under the direction of Nancy R. Kingsbury, Director, Air Force Issues, who may be reached on (202) 275-4268 if you or your staff have any questions concerning this summary. Other major contributors to this summary are Robert D. Murphy, Assistant Director, Michael J. Hazard, Evaluator-in-Charge, and Matthew Lea, Evaluator, Cincinnati Regional Office.

Frank C. Conahan

Frank C. Conahan
Assistant Comptroller General

Summary

Purpose

In November 1990, the Air Force started flight tests to evaluate the radar signature of the B-2 and determine if the signature met the Air Force's earlier predictions. Radar signature is one of the low observable characteristics of the B-2 that is critical to its ability to survive as it carries out its intended mission.

GAO evaluated the initial series of flight tests to measure the radar signature of the first B-2. GAO also reviewed further flight tests to evaluate the B-2's flight worthiness.

Background

Low observable aircraft have features that reduce an adversary's ability to detect, locate, track, and shoot at them. Important factors are radar, infrared, optical, and acoustic signatures. Radar signature is a measure of the visibility of the aircraft to radars.

The fiscal year 1990/1991 Defense Authorization Act (P.L. 101-189) required the Department of Defense to accomplish certain low observable and flight worthiness tests, known as early Block 2 tests, before more than 15 percent of fiscal year 1990 B-2 procurement funds could be expended. The tests were conducted using the first two development aircraft. The first aircraft was used for radar signature tests, and the second aircraft was used primarily for flight worthiness tests.

The act also required the Secretary of Defense to certify that the early Block 2 test results were satisfactory. In addition, the act requires GAO to review the Department of Defense's test reports and evaluation documents on the B-2 aircraft program and periodically report on various aspects of the testing, including the adequacy, rigor, and realism of the development and operational tests; the tests' compliance with the full performance matrix, which identifies minimum conditions that must be used in the tests before certain milestones are considered completed; and the use of appropriate threat data.

An initial series of flight worthiness tests, known as Block 1 tests, was previously conducted with the first aircraft between July 1989 and June 1990. GAO reported on these tests in B-2 Bomber: Initial Flight Tests (GAO/NSIAD-90-284, Sept. 4, 1990).

The Secretary of Defense certified on March 15, 1991, that the results of early Block 2 flight tests were satisfactory and that no significant technical or operational problems were identified. The certification was based on evaluations of test results and reports by the Defense Science Board and the Director of Operational Test and Evaluation.

The actual radar signature measurements differed in a few areas from predictions and specifications. The Defense Science Board reported, however, that no major redesign of the B-2 should be required and that the signature should closely match predictions for the conditions tested once modifications to the aircraft's surface are completed and tested. The Board stated that these test results indicated the B-2 should be survivable.

Results in Brief

The early Block 2 tests and those conducted under Block 1 comprise about 4 percent of the planned B-2 flight test program. The early Block 2 tests were initial development tests and were not designed to demonstrate the B-2's full capabilities or test the B-2 in a representative operational environment. In addition, the tests did not attempt to account for the effects of day-to-day operations, wear and tear on the aircraft and equipment, or maintenance over a long time frame.

The early Block 2 tests adequately met the objectives of partially measuring the first aircraft's radar signature, preliminarily assessing the signature, and further demonstrating the aircraft's flight worthiness. Testing complied with the conditions established in the full performance matrix for these early tests. Even though early test objectives were met, the flight test program has not progressed as rapidly as planned when it began in July 1989.

GAO's Analysis

Testing Met Limited Objectives

The early Block 2 flight tests were responsive to the 1991 full performance matrix requirement of taking early measurements of the radar signature. The test objectives were to provide a preliminary assessment of the radar signature for the first B-2 at selected frequencies intended to be representative of threat radars. The early Block 2 tests measured the aircraft's radar signature 360 degrees laterally around the perimeter of the aircraft. The signature around the perimeter was obtained at angles below the aircraft that are typically exposed to ground-based radars.

The full performance matrix only required the Air Force to measure from the nose to the tail on one side of the aircraft, or 180 degrees around the perimeter of the aircraft. The actual flight measurements were compared with previous Air Force radar signature projections based on scale model tests and computer predictions. Flight testing to verify directly that the B-2 meets radar signature specifications is scheduled later in the flight test program.

Flight tests for the second B-2 adequately demonstrated some basic flight characteristics beyond those accomplished in Block 1 testing. The tests also demonstrated that new flight control software corrected flight stability problems identified in Block 1 testing.

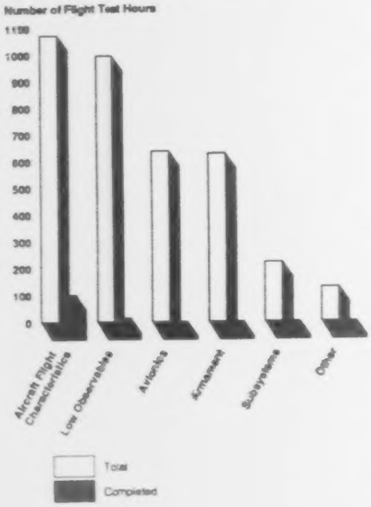
Limited Flight Testing Has Been Completed

The early Block 2 tests were not intended to demonstrate the B-2's full capabilities. Although the tests were rigorously conducted, they were intended only to provide preliminary indications, not a complete analysis, of the B-2's radar signature and to continue analysis of the B-2's flight worthiness. Development and operational testing of the B-2's full capabilities will be accomplished as the flight test program progresses.

As shown in figure 1, the first and second B-2s have flown about 133 total hours, or 4 percent, of the 3,600-hour flight test program. Air Force plans to test low observable features of the B-2 require 992 hours to test the radar, infrared, visual, and acoustic signatures and conduct survivability assessments. The early Block 2 tests consisted of 13 hours of radar signature tests, which is 1 percent of the low observable testing planned. Flight testing of certain integrated mission avionics, subsystems, and armament has not yet started.

Block 1 and early Block 2 testing of the B-2's flight worthiness totaled about 99 hours through January 25, 1991. This represents about 9 percent of the 1,100 flight test hours planned to demonstrate flight and aircraft characteristics and validate aircraft specifications.

Figure 1: B-2 Flight Test Program



Tests Were Not Intended to Portray an Operational Environment

Testing in a representative operational environment is planned to begin in 1992. However, a B-2 will not be tested in a representative mission environment using operational tactics and procedures until 1994. What effects operational use has on the B-2 and whether the Air Force can adequately maintain the low observable features remain to be determined.

Because the flight tests were not designed to simulate operational missions, threat data or simulations of threat systems were not used during the tests. The Air Force plans to test the B-2 against many of the threat systems that were identified by the intelligence community. The Department of Defense's capabilities to test the B-2 in an operationally representative threat environment are limited. Many of the newer and sophisticated threat systems must be simulated by computers, since representative hardware is not available. This is not unique to the B-2 flight test program and does not preclude an adequate survivability assessment.

Test Objectives Were Met, but Schedule Is Slipping

The flight test program has not progressed as planned because test aircraft are being delivered to the Air Force both late and incomplete. Aircraft have been delivered late primarily because of a strike at a major subcontractor and manufacturing difficulties. These have caused the completion of the test program to slip from 1993 to 1995.

In addition, these aircraft are being delivered incomplete. Over 100,000 hours of unanticipated manufacturing work has been done on the first aircraft since it was delivered, decreasing its availability for flight testing. As a result, the Air Force has not accumulated as many flight tests and hours as planned, and early Block 2 flight testing had to start 6 months behind schedule.

Recommendations

GAO is not making any recommendations in this summary. However, GAO has previously recommended that the pace of funding and production for the program be limited until the critical performance elements of the aircraft have been adequately evaluated.

Agency Comments

GAO did not request written agency comments on this summary to meet the 30-day reporting requirement in the act. However, GAO provided a draft of this summary to Department of Defense officials and incorporated their comments where appropriate.

Senator EXON. My follow-on question has to do with two or three closed briefings that I have had on this very subject. And not being an engineer or an expert on aircraft and certainly not on the reliability of the stealthiness, I am somewhat bamboozled with all of the charts that I am given on the angles that they test this at and so forth and so on.

I have wondered, while I think those highly sophisticated tests are very important for the long run, why they are not flying that B-2 aircraft more than they were, and I was not aware of the limited hours that they have flown until you just cited them. I do not know why that aircraft is not flying at the present time against our radar defenses. Now, our radar defenses do not begin to compare with the radar defenses in the Soviet Union knowledgeable in this area.

Yet, we do have some rather sophisticated point source radar that I would think this thing could be tested against and used against somewhere in our system possibly even including mock attacks on U.S. battleships or aircraft carrier groups or things of this nature to test and see under combat-simulated situations, not computers, but actual combat-simulated situations, as to whether or not B-2, if it ran in the Soviet Union, how close it could get to a battle carrier group without our knowing about it, or would we know about it at all.

So, I have been somewhat critical with the pace of the testing program. I keep getting the story, well, we have to go about this in a painstaking way to make sure we are right. So, we are just as concerned as you are, with regard to the proof in the pudding, but we want to make sure the proof is in the pudding and we do not want to miss anything. So, I have not wanted to push them too far too fast.

But what is your evaluation, if you have one, about the speed with which the Air Force is proceeding in conjunction with the contractor on various means of testing? We have two of those aircraft that now fly, and I would think that we could be moving ahead faster with two of them flying more hours against a whole series of different kinds of tests not only under computer designs and angles, but also in practice runs against mock attack points.

Mr. BOWSHER. Senator, what our report says is that the testing that was done last year was what the Air Force thought they could achieve last year. But your point is right, and that is what it says here: "Testing in a representative operational environment is planned to begin in 1992. However, a B-2 will not be tested in a representative mission environment using operational tactics and procedures until 1994. What effects operational use has on the B-2 and whether the Air Force can adequately maintain the low observables remains to be determined." So, that is out there 2 or 3 years now before you will really know what it can do in an operational mode.

Senator EXON. Can you explain to me? Did your experts ask them why it takes 2 or 3 years to fly this aircraft against what we have now?

Mr. BOWSHER. I am going to give you one more fact here, and then I am going to let Frank take that question. It says here: "The flight test program has not progressed as planned because test aircraft are being delivered to the Air Force both late and somewhat incomplete. Aircraft has been delivered late primarily because of a strike at a major subcontractor and manufacturing difficulties. These have caused the completion of the test program to slip from 1993 to 1995."

Now, the issue is whether you could move up some of the operational testing, Frank, do you want to answer that or should we check with some of our people?

Mr. CONAHAN. No. I think we can answer that at least in a general sense.

Indeed, there are two aircraft that have flown, but each aircraft is a little different from the others. And you cannot test everything that needs to be tested on the aircraft that have been delivered to date. For example, in addition to air worthiness testing, you have to do the low observable testing that we have been talking about. But in addition to that, you have to do avionics testing, instrumentation testing, and all the rest of that. We do not have aircraft yet where that whole range of testing can be done.

There is a master testing plan, a matrix for testing, which goes out through the 1993-1994 time frame. We have looked at that, and I think if you compare that with previous testing regimes, it is put together fairly well. And if they comply with that, they will get the answers to the questions that we think are necessary.

Our suggestion is that we do not begin production of new aircraft until those answers are available.

There have been reschedulings of that testing plan in the past and for that reason the program has not moved as quickly as it was originally scheduled. I do not think that they can do testing much more quickly than is currently planned?

Senator EXON. Look, I am not so much concerned—if the airplane flies—and I am sure there are going to be some more avionics testing. Instrument testing is important. What I do not understand is why we do not take one of those airplanes—and we know that the follow-on aircraft have some modifications that would make them even more stealthy. Why haven't we flown that airplane in its present form, because it can fly, against point radar that we have to see what has happened? Why haven't we done that? Are we afraid that we are going to find out something?

Mr. BOWSHER. Why don't we do this, Senator? Why don't we have our experts go out and ask some of those questions?

Senator EXON. Well, are those good questions?

Mr. BOWSHER. Sure. And we will come back to you with some answers.

Senator EXON. When I asked that question, they say, well, we cannot do that. Well, why can't we do that? We have an airplane that flies I understand and flies well. They tell me it is very stable and they are very happy with everything. So, it would seem to me they could fly it against some radar someplace to test it before we go into all the sophisticated things. It would at least give us some idea of whether we are reasonably close to our goal of stealthiness before we get into all of the technical details.

Senator Nunn has returned.

Mr. CONAHAN. Can I just comment on that please?

We quite agree with you. This report right here is an unclassified summary of a classified report, classified at the special access level. May I suggest that we submit that report, get a copy of that over to you, because I think it is going to answer some of the precise questions that you are raising.

Senator **Exon**. Could you comment? I know that the Chairman will want to get into this. I don't think you have said much about the new SDI plan. Did you address that? I was out of the room to vote. Did I hear how the budget proposal fits in with the revised SDI program that has been advanced?

Mr. **Conahan**. We have not addressed it in this testimony. We addressed it a year ago and said how the costing fit into the program. We are currently doing that audit. It will not be completed before early summer, at which time we will report on it.

Senator **Exon**. Thank you very much.

Thank you, Mr. Chairman. My time is up and past, but nobody else was here.

Chairman **Nunn** [resumes chair]. I would like to follow with questions on the B-2 from Senator Exon's questions.

When we talk about proving a system, testing it out and so forth, there is no doubt in mind that the essentials should be tested before we go into a whole lot of production. But there is a lot of testing at the end of the cycle that gets into O&M testing; a lot of testing that has nothing to do with the basic fundamental characteristics of flying, stealth and so forth. When you are talking about testing it out and completing all the testing before you get into any kind of significant production, what is your definition of testing under that? What are the essentials that have to be tested? Because a lot of testing is not based on the essentials.

Mr. **Conahan**. Mr. Chairman, the 3,600-hour testing program on this aircraft consists of flight worthiness, low observables, avionics, armaments, and subsystems, and a very, very small number, less than 100 hours for some other things that are yet undefined. So, we are not talking about O&M and logistical support testing for this aircraft. We are talking about the fundamental aspects of it.

Chairman **Nunn**. There is a lot of refinement testing in here too, though, as I understand it, Frank. For instance, you test the stealth, the signature measures, and so forth, and their ability to evade defenses, and then after you basically establish that, you still do an awful lot more testing to refine that to respond to possible changing threats, to postulate future threats that are not there yet, all those kinds of tests. So, I think when we talk about completing testing, particularly when you realize that when you slow a system down, you greatly increase the cost of it, we have to say what are the essential tests that ought to be done.

Mr. **Conahan**. Mr. Chairman, our principal concerns with testing have always been in the avionics area. When we did a classified testimony before this committee earlier on, that was the area that we dealt with. The classified report that I mentioned just a moment ago talks about that. So, it is not so much in the low observable area or the flight worthiness area where we have our concern.

Chairman **Nunn**. It's mainly in avionics?

Mr. CONAHAN. It's mainly in avionics because that is where we found the problems in the B-1 aircraft, and that is where we find problems in other systems, such as with the SSN-21. We do not see much in the way of problems with the hull there, but we do see with the advanced combat system, the so- called BSY-2. You run into software problems. There are unknowns that have to be addressed out there. So, it is in that area where we have found generally the problems.

Chairman NUNN. The B-2 test progress is being monitored, as I understand it, by the Defense Science Board Task Force, the OT&E, Operation, Test and Evaluation, the independent review group and also GAO. There are four different tiers of monitoring those tests now, is that right?

Mr. CONAHAN. That is correct, and there are reporting requirements to the Congress directly as well.

Chairman NUNN. When you mentioned the amount of money of the total B-2 program that will have been spent—I believe you say in your prepared testimony, "DOD will have contracted for almost half the planned B-2 fleet and almost four-fifths of the program's total cost will have been appropriated before DOD has completed testing"—I understand what you are saying there. I guess I agree with the fundamental point, but the four-fifths of the anticipated costs includes all R&D costs, does it not?

Mr. CONAHAN. That is correct.

Mr. BOWSHER. That is correct.

Chairman NUNN. And all those R&D costs were basically essential, no matter what, before you test it. That has to precede testing, doesn't it? It seems to me when you use those figures, you ought to weed out those things like that that everybody would concede, and then set your percentage up based on a more meaningful figure.

Mr. BOWSHER. Okay, we could do that. That might make sense.

Chairman NUNN. Do you see what I am talking about?

Mr. BOWSHER. Yes.

Chairman NUNN. Otherwise, I think the public can get an impression that it is a whole lot worse than it is.

Mr. BOWSHER. I see your point, Mr. Chairman.

Senator EXON. Senator Nunn, back to the point that I was making before you came in I believe, unlike any other bomber that we have ever built, there is more up-front cost with the way we manufactured this than there was on any other aircraft. I think what you are saying is that since those up-front costs are in there, it is not really fair to compare four-fifths of the cost of this airplane with four-fifths of the cost of the B-1, for example. Is that the point you are making?

Chairman NUNN. Well, I guess my point would apply to either the B-1 or the B-2 if you were using the four-fifths figure and it included the R&D costs. I do not think anybody would contend that you can get to testing of a system without doing the R&D first. There is a certain amount of cost that should be deferred, and can prudently be deferred, until you complete the testing on the fly before you buy. You have to do an awful lot of expenditure before you can ever get to the point where you test it all. And I think in looking at that, it would be a fairer, more objective analysis to state it that way, whether it was the B-2 or whether it was on something else. In the B-2 case, so much of it is R&D that it makes it a lot——

Mr. BOWSHER. Let us run those numbers and see what that shows, and we will present those.

Mr. CONAHAN. Mr. Chairman, let me add something there too as well.

It is kind of difficult in a program like this. You will recall that this was a special access required program, and some of the earlier numbers are still classified. And it is kind of difficult until those numbers become declassified to make the presentation that you are looking for.

Chairman NUNN. Right.

One other question on the B-2, and then I will rotate. My time is about to expire.

The avionics testing on the B-2 I understand starts with aircraft number 3. Is that right, Frank?

Mr. CONAHAN. I believe that is so, yes.

Chairman NUNN. The next one to be delivered this summer.

Do you have any rough estimate of how many flight hours you think we will need before we can tell whether the B-2 will have a B-1 type disaster on avionics?

Mr. CONAHAN. I can't answer it in flight hours, but I believe the schedule is mid to late 1992.

Chairman NUNN. My time has expired. Senator McCain?

Senator MCCAIN. Thank you, Mr. Chairman. I have a lot to ask and a lot to say. In addition, I am going to have to submit written questions.

I am deeply concerned about the negative role the GAO is playing as the critic of virtually every U.S. weapons system. I am concerned that the work lacks balance, does not properly inform the Congress, and has caused substantial cost to the taxpayer.

I guess a lot of my discontent, and that of many others with regard to the misinformation purveyed by the GAO was highlighted on my trip to Kuwait. I met with generals, soldiers and others who had to respond to the GAO investigative team sent there. While the Army was trying to get ready to fight a war, Mr. Bowsher and Mr. Conahan sent their people there for reasons which are still not clear to me. They angered all of the individuals who were there preparing to sacrifice. Instead of serving their Nation, they had to spend their time answering questions by the GAO. The questions were totally uncalled for, completely irrelevant, and could have cost American lives. Lives could have been lost because their work was diverted by your team of people wearing green eyeshades.

My relationship with Mr. Conahan goes way back. When I was on the Foreign Affairs Committee and we passed a law that said that humanitarian aid to the contras couldn't have anything to do with American officials. So, Mr. Conahan issued a report saying that we could not account for the aid. This occurred as well in response to some liberal, left-wing prodding.

But more to the point, there are many weapons systems, Mr. Bowsher, which have been excoriated by you and your cadre. This criticism has been judged completely invalid by their performance during the war. Now, I know that you will embark on a vigorous effort to debunk the service and performance not only of the equipment, but of the men and women over there. You are embarked on that effort, as I understand, right now.

What I would like to have in writing from you, Mr. Bowsher, is a detailed and fully comprehensive chronological list of all studies, papers, and correspondence issued by the GAO during the last 15 years containing any criticism of a weapons system or military. You should include the two ALQ systems that you recommended be canceled. These two systems served a vital role in the engagement in the Persian Gulf and saved many pilots' lives. I would also like a summary of the criticisms made in each such document, an estimate by the GAO of their current validity, and an estimate of the total cost to the American taxpayer of each such GAO activity, showing the total associated costs of all major studies and research activities. Include in your estimates travel and overhead, including the expense of sending your team over there in January when the men and women in the military were preparing for battle. Finally, I would like a follow-up analysis of the impact of all major studies and research activities listing the benefits and savings to the taxpayer, if any.

I also question your assumptions that this administration, General Powell, Secretary Cheney, General Schwarzkopf, and others who have served so well, have not adjusted the defense budget and our national security requirements to meet the challenges that lie ahead of us. I happen to think they have done a pretty good job of it, and by the way, so do the American people, overwhelmingly so. They have the strong approval of the President of the United States and his plans for the future even though GAO continually does not and continues to carp and criticize.

I would like to start out by asking you, Mr. Bowsher, what was the justification for sending a team of GAO investigators over to Saudi Arabia, when those people were working 18-20 hours a day trying to get ready for combat, and taking their valuable time, energy and effort away from their work to answer questions from your people?

Mr. BOWSHER. Well, Senator McCain, I will answer that question, and I will also provide the information that you are requesting. I think you will find that much of our work in the past years does not come out characterized quite as you say. We have been asked by the committees, both the Senate and the House, to look at these various situations, and we have done it in an as objective and candid manner as we can, and we will submit them.

And that is exactly what we were doing over there. We were asked by a committee chairman in the House of Representatives——

Senator MCCAIN. Which committee?

Mr. BOWSHER. Chairman Dingell's committee.

Senator MCCAIN. What committee is that?

Mr. BOWSHER. Energy and Commerce.

Senator MCCAIN. The Energy and Commerce Committee.

Mr. BOWSHER. Yes.

Senator MCCAIN. I see. Thank you.

Mr. BOWSHER. We were asked to do other work over there. We closely worked with the leadership in the Pentagon.

Senator **McCain**. Do you think that the DOD liked you going over there, Mr. Bowsher? The Chief of Staff of the Army testified that he was very, very unhappy about it.

Mr. **Bowsher**. Well, we worked with them on the various requests, and it was the only one we went over on. In other words, we were being asked by some other committees to go over as well, and we worked very closely with the leadership of the Defense Department. That was the one where everybody finally agreed that we should go over. We only went with their permission. When we came back we briefed the Secretary of the Army and the leadership of the Army and the leadership here in the Congress. And we tried to do it in a manner that did not make it more difficult for the people.

Senator **McCain**. According to them, you made it extremely difficult, Mr. Bowsher. According to the men and women in the field, you made it extremely difficult—your people did. And they treated them in a very arrogant and overbearing fashion. That is what they told me directly, those people that came in contact with them.

My time has expired, Mr. Chairman.

We have a long way to go on this issue, Mr. Chairman.

Chairman **Nunn**. Thank you, Senator McCain.

Senator Thurmond, I believe you are next for your first round. Then we will go to Senator Exon.

I want to put everyone on notice that we have a vote. I am going to run over and vote, and I would ask, Mr. Bowsher, if you could stand by, we will get you out of here hopefully on time. There will be members coming back.

Mr. **Bowsher**. Sure.

Senator **Thurmond** [presiding]. Mr. Bowsher, I want to welcome you to this committee.

Mr. **Bowsher**. Thank you, Senator.

Senator **Thurmond**. Mr. Bowsher, the Air Force contends that the B-2 is the most tested aircraft in history. For instance, all the avionics have been flying in a test bed for years. Is it your position that we should not count these tests, but wait till one complete airplane undergoes all the flying tests that the Air Force proposes?

Mr. **Bowsher**. No. What we have said, Senator, is that the Air Forces' test program is a 3,600-hour flight test program. The first and the second B-2's which have been built and are flying have flown about 133 total hours, or 4 percent of that 3,600-hour flight test program, and that the block two tests consisted of 13 hours of radar signature tests, which is 1 percent of the low observable testing plan. So, what we were pointing out is that you have really just begun the testing of the actual planes themselves, recognizing that the testing has been done on the computers before in the past. But this is the Air Forces' own test program that we are reporting on, the 3,600-hour flight test program, and we were just pointing out what had been accomplished and what we had yet to go.

Senator **Thurmond**. Mr. Bowsher, are you recommending that the Air Force hold off production of the B-2 until all the testing is completed, and do you really think we can afford that or need that?

Mr. **Bowsher**. Last year we did make a recommendation that the Congress consider holding off going forward on the production until more testing had been done, pointing out that this was one of the problems that we got in with the B-1 bomber. In this report that we issued this year, GAO did not make any recommendation. We just presented the facts as I have done here today.

Senator **Thurmond**. If we wait until all the testing is complete, we would have to close the factory and probably send the cost through the roof. Holding off production until all testing is complete is appropriate if there is a lot of risk. Do you honestly think there is a lot of risk that the B-2 will not perform?

Mr. **Bowsher**. We are not recommending that all testing be completed. We are just recommending that sufficient testing be done so that the major risks are behind you. And as Mr. Conahan has pointed out, it is in the avionics area where we are particularly concerned that enough testing be done to know that those systems, namely the software, are going to work. Again, that is the area where we see a lot of trouble in the systems that do run into trouble. And so, that is the caution that we have put forth to the Congress.

Senator **Thurmond**. Mr. Bowsher, you indicate that your work on the C-17 has raised questions about whether it can be produced on schedule and meet its performance goals. Every Air Force witness that has knowledge of the C-17 program, I believe, has testified that the C-17 is making good progress and that it will meet the production deadlines.

What specific issues concern you and have you brought them to the attention of the Air Force and, if so, what has been their response?

Mr. **Conahan**. We have pointed out, Senator, that there have been problems in that program, that there have been schedule delays, and that there have been cost increases. The Air Force is optimistic that they will be able to overcome those problems, but I think that remains to be seen. And that is where we stand on that issue right now.

Senator **Thurmond**. Mr. Bowsher, the Defense Department is proposing that the Army National Guard be cut by approximately 30 percent over the next 5 years. Is this a cost effective and wise proposal?

Mr. **Conahan**. I think, Senator, that the total force concept worked very well as we have seen in the Persian Gulf, and the National Guard units were a very integral part of making that work. So, I do not think that we have any bases for coming to any conclusion without taking a better look at the assignment of functions to both the Guard and to the Reserve.

Senator **Thurmond**. I believe I am going to have to go and vote. I will be back here in a little bit. We will just take a recess for a couple minutes.

[Recess.]

Senator **Exon** [presiding]. We will reconvene. We apologize once again, gentlemen, for the unruliness of the situation today, but it does not mean that we are not very much interested in your testimony, which I think is tremendously important.

If you could expand on my question about the Star Wars programs, the reevaluation of that program. Does the SDI program fit into this overall category of warning that you are giving us with regard to the budget? Does it appear to you that the amount requested for the SDI funding for next year and the year following that is going to be excessive given the budget constraints?

Mr. **Bowsher**. We are looking at that, Senator, and we do hope to have that report out by the summer. One of the things too, of course, is we are getting some indications that some people want to change that program and put another emphasis on it. But we are looking at the current program right now, the currently approved program, and we will be able to give you the answers we hope this summer.

Senator **Exon**. Do you have any opinion on the base closing measures? It is my view that some people seem to think that now that we are closing these bases, that should show up in savings in the budget. I suspect that there is not going to be savings in the budget, but probably a little cost for a year or 2 before we begin to see any savings at all, and even then the base closing measures, as much attention as has been paid to them, is obviously the salvation of bringing our defense spending into line with what we would like to see it.

Mr. **Bowsher**. The base closure always does cost money. In other words, it is kind of like when you reduce the forces. I have often told people that you have to recognize that when you are scaling down, there are one-time costs that sometimes are fairly significant, and they do have to be incurred before you can get the longer term cost savings. And so, that is very true in these base closures.

We have an official role actually in the base closure process, and Frank is in charge of it. So, I will let him describe it. And we will be carrying that out for the Congress.

Senator **Exon**. Frank?

Mr. **Conahan**. The Base Closing Commission has received the candidates for closure and realignment, as have we. We have 30 days, up through the 15th of next month, to make a report to the commission and to the Congress on our views concerning the recommendations for closure and realignment. We just began to receive the backup data from the services on that, and so I am not in a position to state how we are going to come out on it.

I am, however, encouraged that there is seemingly a lot more analysis behind the recommendations this time as contrasted with the recommendations that were made in 1988. This is particularly true with respect to the Army and the Air Force. We have not seen enough from the Navy yet for me to draw that conclusion, but I am encouraged on what I have seen.

Senator **Exon**. Let's go back to stealthiness once again. I am wondering whether or not during the early phases, middle phases, and late phases of the F–117, which I must say was one of those black programs that remained astonishingly black in my view for a number of years beyond when many other programs that were black came to the surface in one form or another, did you do any accounting or investigation during the development of that program that gives you any basis, parameters of judgment, when you are viewing the B–2?

Mr. **Conahan**. We did not do work during the development cycle of the F–117A. It was something that we could not get to at that time in view of everything else that we had to do.

But we did do an analysis of it in 1988, and we saw in that program some of the same features that we see in the B-2, that we saw in the B-1. That program had a high degree of concurrency in it. The costs increased severely throughout that program. It had full support of the Congress so that it did not run into the perturbations that some other programs run into. But I think it suffered from some of the same development and early production weaknesses in that program as we see in the other ones.

Mr. BOWSHER. One point I might make on that is that when you are dealing with that part of Lockheed, the old Skunk Works, as they refer to it, you are dealing with an organization that has been in this business of developing these planes and they have had a success record, although they have problems. As Frank points out, getting a plane built and having it fly they do fairly well.

When you take some of that and go to, it seems like, the larger organizations, as we did on the A-12 and as we do in the other programs, we seem to have a mixed result. Sometimes it seems to work and sometimes we seem to run into not just problems, but very large problems. And so, we are thinking of doing a GAO study to see if there is some correlation in those issues.

Mr. CONAHAN. I think what we need to do is to separate the discussion of development and early production of these systems with the ultimate performance of the systems. The role of GAO, as well as organizations such as the Office of the Secretary of Defense's Director of Test and Evaluation, is to assure that the proper bases are covered as we go through the business of developing and producing these weapons. And hopefully, with that kind of visibility from ourselves, who are the analytic organizations, and oversight provided by people like yourselves, the necessary bugs are worked out of the programs before they are delivered to our troops. That is what our collective aim is to do in this effort.

Senator EXON. Just for the historical record's sake, was your evaluation in 1988 of the F-117A positive? Were you critical of the program at that time? What was your evaluation? I am trying to get some historical perspective, since there has been some criticism of some of the reports you have given. I do not remember seeing that report, but certainly by 1988 that plane should have been actively flying for some time by that time before you even got into it. Is that right?

Mr. CONAHAN. That is correct. What we were asked to do was to, indeed, give a historical perspective of the development and production of the aircraft and not the operation of the aircraft.

Senator EXON. And what was your view?

Mr. CONAHAN. That the features of that program were similar to a number of the other programs that were done about at the same time. As I said, the very first one had to do with concurrency of development and production and the resultant schedule slippages and cost increases associated with it. I do not think I should really say much more beyond that.

Senator EXON. Thank you.

Mr. BOWSHER. Senator, if you wanted, we would be pleased to send our team over and take you through that report at some point.

Senator EXON. No. I don't want to get into a lot of details on it because that is a program that has proven itself to be very successful in the end. Of all of the systems that we had performing and performing well over in the Gulf, I do not believe that any of the systems, including the Patriot, performed more according to plan or was as effective as planned than was the F-117. It was just a magnificent aircraft. I believe it flew 40 percent of the total missions that were flown in the first days of the war and practically all of the missions in heavily defended and radar defended areas. That is why I asked the question, but your answer has been satisfactory, and I accept it. Senator Thurmond?

Senator THURMOND. Thank you, Mr. Chairman.

Mr. Bowsher, in yesterday's Readiness Subcommittee hearing on the fiscal year 1992 ammunition budget request, the witnesses expressed their concerns about the status of the ammunition production base. Several indicated that this Nation no longer has sufficient production capability to meet our surge needs. Would you comment on the status of this critical defense industry?

Mr. BOWSHER. Would this be the ammunitions, Senator, what we normally call the ammunition, but not the smart bombs?

Senator THURMOND. That is correct.

Mr. BOWSHER. It would be the normal thing.

Frank, why don't you address that issue?

Mr. CONAHAN. I think that insofar as the ammunition items are concerned, that we do not have a concern.

With respect to the sophisticated munitions that you were talking about, I think that there is some question. I am not sure that I can give you an answer on that. I am not really sure that the Department of Defense can give you a good answer on that for two reasons. Number one, we do not have good information on the lower tiers of the industrial base either in the munitions area or elsewhere, and I think that the Department of Defense needs to come up with that kind of information. We have been working with them for some time. They do have databases, but they do not really do for us what we need in order to answer your question. I think we just have to get on with that effort.

Senator THURMOND. Mr. Bowsher, in your cost estimate of Operation Desert Shield, you include $50 billion to raise, equip, and maintain the force that was deployed to the Persian Gulf. Are you telling us that this amount is above and beyond the cost of the normal operation of these forces had Saddam Hussein not invaded Kuwait?

Mr. BOWSHER. What we have said on the cost of the desert war is that you basically have three parts. You have the incremental costs and our best estimate right now is about $40 billion, and that would be the cost that you incur over and above those forces, say, staying in Europe or in the United States. That incremental cost includes the cost to deploy the troops, activate Reserve units and the added training. It also includes the cost of bringing the troops home.

Now, we have another $50 billion roughly of what we call baseline costs, and that is cost of the forces, the American taxpayer had paid to have these kinds of forces in being. Now, some people would say, well, that should not count as a cost of the war because that is sunk costs. We say, no, it is not sunk costs because at the budget agreement last summer, there was a decision to bring down our forces. So, one of the costs here for the American taxpayer is the actual costs of keeping those forces in being, and ready to go somewhere such as the Persian Gulf.

So, our best estimate is that it cost about $100 billion to provide that kind of a force, 500,000 troops, and we base that much on the notional cost of forces for a full fiscal year. You really brought the troops in kind of in a bell curve. You brought them in in August and September at not too rapid a rate, and then you built them up very fast in October, November and December. And then, of course, we are taking them out now. So, if you make a rough estimate—and that is about what it is—of what percentage of the $100 billion would be assigned to the forces over there, it is about $50 billion.

And so, the third component a miscellaneous $10 billion that is made up of the forgiveness of the debt to Egypt and some of the other assistance costs. So, it comes to about $100 billion as we view it, of which $40 billion is incremental.

Senator THURMOND. Mr. Bowsher, you indicated that you have identified some DMR savings that will not be achievable. Would you please specify the amounts and the programs that will not achieve their savings projections, and why not?

Mr. BOWSHER. The main points on the DMR savings are that the ones that have been identified by DOD sometimes do not have as much support as we would have liked to see. Also, they are relying upon future actions to achieve these savings. So, we have listed here the categories which come up to $70 billion. Now you have to go out and save that, and that will be dependent on what actions are taken both in the Congress and in DOD.

Senator THURMOND. Mr. Bowsher, despite the dire projections of the General Accounting Office regarding some of our weapons systems' maintainability, the equipment performed exceptionally well during Operation Desert Storm. Is the criteria you used to evaluate these systems flawed, and how do you account for the success of our weapons systems such as the Apache helicopter?

Mr. BOWSHER. No. When we were looking at these various systems, we were generally pointing out the problems, and that is kind of the role that we play. In other words, we have been asked by the Congress to look at the weapons each year as they move through the process, and what we tried to identify is where some of the problem areas are.

One of the reasons that some of these weapons systems worked so well in the war is that you had oversight in the American system of government and that the military leadership and the contractors were able to fix many of the problems that were identified.

Also, you had very strong logistics support. As we pointed out in our testimony, the Air Force had four-fifths of its logistics support to support one-fifth of its aircraft. Now, I have no criticism of that because, if you are going to fight a war, that is exactly what you want to do. But we had the luxury of moving four-fifths of our logistics support over there, and therefore we were able to do it on that basis.

We are going to do a full analysis of our past reports on these weapons systems, and I think what will come out is that the GAO played a very constructive role in pointing out some of the problems. The leadership of the military services and the defense industry were able to correct many of those problems and, that was a contributing factor to the success we had in the Gulf.

Senator **Thurmond**. Mr. Bowsher, your statement indicates that in the 5-year defense plan the Defense Department overstates base closure savings by $5.5 billion. This would lead one to conclude that the Secretary's base closure recommendations are flawed. Have you analyzed the list submitted by the Base Closure Commission? If so, what are your savings estimates?

Mr. **Conahan**. Senator, the budget that was submitted earlier in the year did project the kind of savings that you are suggesting. It was the Secretary himself, in putting forth the recommendations on April 12, that revised his savings estimates down by that $5.5 billion. We are presently analyzing it. We think that there will be long-term savings, but I think that for the moment we have to go with the Secretary's projections.

Senator **Thurmond**. Mr. Chairman, I have just two more. Would it be all right to ask those?

Senator **Exon**. Yes. We have to have Mr. Bowsher back to his office by 5:30. So, we are running out of time. Go ahead and ask whatever questions you have, and we may have some additional questions for the record.

Senator **Thurmond**. Mr. Bowsher, I believe we all agree that the uncertain world situation will require the United States to maintain highly mobile forces that remain in a high state of readiness and capable of responding to a crisis on short notice. Is there any doubt that the forces projected in the defense plan will not meet this objective, and if so, what are they?

Mr. **Bowsher**. If I understand the question right, Senator, what we believe is that when the world changed literally there after the Berlin Wall came down, you had to look at what kind of forces you would need for the future, which of course is always uncertain. We think the Desert Shield/Storm war has indicated to us what the possibility of a third world and limited war type situation can be. We believe that in the future months, the Secretary of Defense and the leadership will I'm sure be coming with more changes as to what they think is necessary to have an effective force.

I think a good example of this is the sealift issue or the prepositioning issue. I know that some people are taking the position that we ought to preposition all the weapons on land because it is cheaper than to have them on ships. But I think you need to look at how the Marines were able to arrive and be ready as quick as they were in this war and how they used special ships that the Congress had authorized and appropriated. They had the ships properly situated so that they could move their equipment and get it with the troops in a very fast manner.

These are the kinds of issues that I think that the leadership and certainly the Congress will have to think through. And that is what I think are the big decisions facing us in the next few years because many of the weapons we have today were designed for the

European war, and we have to think through what we need for the future.

Senator THURMOND. My last question. Mr. Bowsher, Congress has historically increased the funding for the Reserve components to upgrade their readiness. I have supported and sponsored many of these funding increases. Have these funding increases had the desired effect of upgrading the readiness of this important component of the total force? If not, why not?

Mr. BOWSHER. Well, our findings are still very preliminary based on the war, and we are certainly looking into these areas. But I think the preliminary findings would indicate that there were many reserve units that performed very, very well. Many of them were in a support area or in a transportation area like the Air Force transportation. Some of the combat roundout units were not able to come up to speed.

These are some of the areas that we have to look at carefully, and I know the leadership in the Pentagon is planning to do that. The total force concept is a major issue for the future because we must have a total force concept that works, and I think we can. I was very encouraged by how it worked this time. We obviously have some lessons learned, and I think if we go after those lessons learned and solve some of those problems, the total force concept can work very well.

Senator THURMOND. Thank you for your presence, and thank you for testimony.

Mr. Chairman, I ask unanimous consent that my statement follow that of the ranking member.

Chairman NUNN [resumes chair]. Without objection, it will be.

Mr. Bowsher, in an effort to continue and still get you out of here on time, let me run through a few questions. I do not know whether we will have any more members coming in, but I can assure you your testimony will be given a great deal of attention by the committee.

According to your testimony, you say: "It is not clear whether force structure reductions have been based simply on budgetary conditions or on in-depth evaluations of threat, risk, roles, missions, and functions." Secretary Cheney testified to the committee earlier this year that this budget is based on the new strategy enunciated by the President, General Powell, and the Secretary.

My question is what standards would you suggest we use to judge how well this defense plan reflects the administration's national military strategy.

Mr. BOWSHER. I guess that is not an easy question. It would appear to me that now is a good time to think it through one more time as to what we possibly need because I still believe that many of our weapons and our force levels were predicated on that big European war. I think everybody is coming more and more to the thought that we need a really highly flexible force that can move and move fast and have their equipment ready. We had a great advantage in this war because we could set the timetable. If we had to go into a war situation where the opponent was setting the timetable, it would be quite a different situation. So, I think that the strategy and matching up the forces has got to have a lot of flexibility, in the future. More of what I see in the writings, indicate that people are coming to that conclusion.

I think you have some major ones coming up too. I do not know whether you saw Admiral Metcalf's articles in the Naval Proceedings, but he is raising the issue of cruise missiles. What does that do to aircraft, the reliance on manned air, you might say, to do some of these missions versus the ability to even take a submarine out there and to launch cruise missiles. With the improved features that you can build into that, it could change warfare a great deal. The issue that Senator Exon was leading to about stealth aircraft against surface naval ships is a big issue.

So, I think technology is moving so fast nowadays that trying to achieve the modern force is something that is going to take review on a fairly current basis. I think a good example of it was how the Russians really set up Iraq. If I understand what was happening over there, the Russians set the Iraqis up with a World War II type defense, and we came long with more modern technology and more modern thinking and pretty much wiped them out. I was with one of the admirals just in the last week, and he was pointing out that nine submarines could have launched all the cruise missiles that were launched in this war. When you think you can package that kind of technology with that kind of stealth, namely, where did those things come from, you have a whole new type of warfare that we did not have a few years ago. So, that is the kind of thinking that has to be reviewed, and this committee, of course, is the key one to do it.

Chairman NUNN. The question of industrial base. Secretary Cheney is clearly going for more modern weapons. At virtually every hearing this year, the members of this committee and witnesses have both expressed concern about maintaining the industrial base. Of course, there is no doubt about the fact, when you bring the force structure down and the defense budget down and the threat has gone down, you are going to buy less weapons. The 1992 procurement request is over 25 percent below the 1990 level.

Are we going to be able to keep the necessary industrial base as we shift to a new generation of weapons systems and terminate more and more existing production lines? Are you concerned about the subcontractor base and whether we are going to be in an R&D stage on a lot of these weapons for a period of time, and when we get down to the production stage of them, we are not going to be able to maintain enough industrial base because of cutting out other programs to get there? Does that give you concern? And if so, are there steps or ways we should think about this problem?

Mr. BOWSHER. It does give us concern in other words, now that we are going to this smaller force and our platforms of today last so long. In the old days if you built a fighter airplane and got a few years of life out of it, you thought that was good. Today we get sometimes 20-25 years of life out of an airplane. So, the production base that we need today is totally different than what we needed, say, 25 years ago.

And so, we mentioned earlier in the discussion here, Mr. Chairman, when you weren't here, that we think the subcontractor feature of the industrial base and the whole industrial base is very, very important. I think that the DOD people need to kind of model what that is and what is needed because we have never really got on top of what the industrial base is. And there is no question that we will have fewer weapons as you look at the President's request this year. It is substantially down in the procurement area, and probably will be in the future.

Chairman NUNN. So, you think that is an item that the Department of Defense really ought to bear down on and put a few models together.

Mr. BOWSHER. Yes, like in shipbuilding, when you are looking at the Sea Wolf program, you are looking at a program that the shipyards would like to have many more than what probably we would be able to afford or maybe even need. But at the same time, we have built two great submarine building yards at Newport News and Electric Boat. Those are very capable yards. So, the question is how do you balance the utilization of those yards and the submarine program of the future.

Chairman NUNN. Has anybody asked you about the cost of the Persian Gulf conflict? I do not want to repeat.

Mr. BOWSHER. Yes, they have.

Chairman NUNN. You have gone through that?

Mr. BOWSHER. We have been over that. I would be happy to repeat it.

Chairman NUNN. Just very briefly, what are the incremental costs that you are projecting now?

Mr. BOWSHER. Our best estimate is still right around $40 billion on the incremental costs, and we have come to an idea that there is $50 billion of baseline costs. And how we arrive at that is we say to have a 500,000 force level ready to fight is kind of what we had in Europe. And we take those cost numbers, and we say that cost about $100 billion. We took them into the Saudi Arabia/Kuwait area in early August and September, built them up gradually, and then built them up faster. Now we are bringing them down and taking them out. If you do a rough estimate, you might say that those forces cost the American people about $50 billion just to have them ready to go. And then you put the $40 billion of incremental costs on top, and then there is $10 billion of miscellaneous cost, like forgiving the debt to Egypt and the additional CHAMPUS costs and things like that. So, you come out about $100 billion, of which $40 billion is incremental. That is our best estimate at this time.

Chairman NUNN. In other words, the other $60 billion we would have spent anyway?

Mr. BOWSHER. The other $60 billion would have been spent but maybe in a decreasing amount because if you had been able to stick with the budget agreement and what you were trying to achieve there, you probably would have come down with some costs which would not have been costs except for having the war.

Chairman NUNN. If someone asked you the blank question as to how much the Persian Gulf war cost that would not have been expended had we not had the war—or let's put it another way.

If somebody said if Iraq had not invaded Kuwait—so you back up to August 2 rather than January 16. If Iraq had not invaded Kuwait, how much money would we, being the allies—let's put it U.S. cost—how much would we not have spent?

Mr. **Bowsher**. I think you would include the $40 billion of incremental costs and some of that $10 billion. I do not think we would have forgiven the debt to Egypt, but of course then there is the question of whether it would have ever been paid one way or the other. Also, some of the CHAMPUS cost would be included. So, it is somewhere between $40 billion and $50 billion.

Chairman **Nunn**. In a January 1991 report, the GAO concluded that U.S. soldiers were not adequately equipped or trained to conduct chemical operations. However, the GAO review for this report was concluded in July 1990, the month before Operation Desert Shield began. In a cover letter, GAO noted that the Army maintains that the units it deployed to the Middle East received increased training for chemical operations, and that Desert Shield personnel were not lacking in chemical protective clothing and equipment.

Has the GAO had an opportunity to review these claims?

Mr. **Bowsher**. We have reviewed and thought about those. Let me ask Frank to describe.

Mr. **Conahan**. No. We have not yet been in a position to validate the Pentagon's statements with respect to the training and equipment that was provided to the soldiers after they had deployed. That is an effort that still remains to be done by us.

Chairman **Nunn**. Have you answered any questions on the ATF yet today?

Mr. **Bowsher**. No, we haven't.

Chairman **Nunn**. Most people agree that the reduction in the threat allows us to reduce the concurrency in our acquisition of major weapons. In the ATF program we had four prototypes flying before full-scale development even started, partly as a result of the length in the competitive nature of the development process. The ATF is an expensive R&D program for the government, in addition to the large expense each of the competing teams paid out of their pockets, which I think was about $750 million apiece. The demonstration phase of this validation stage will cost another $5 billion, and the full-scale development will cost another $11 billion.

Can we afford lengthy competitive demonstration phases like this for all of our major weapons programs in the future? Is this the way to do it?

Mr. **Bowsher**. Yes, I think it is the way to do it. It is costly up front, as the numbers indicate, but when you think about the programs that have worked like the F–15 and the F–16 and the F–18, this is basically how we achieved it. And we ended up not only with programs that worked, but with programs that had growth in them. And those were the weapons that basically were used in this war.

If you contrast it to the A–12 where we spend billions of dollars and do not get anything trying to do it the other way through competition is better. You would only do this on your major weapons. But when you are going for your next generation fighter program, I think building some planes and flying them and making sure you know what you have is the safe way to do and in the long run probably the least costly.

Chairman **Nunn**. On the inventory problem, you stated last year that DOD had $34 billion in inventory "that probably will never be needed or used". Have you taken a look to see if any of this "unneeded" inventory was used in Operation Desert Storm?

Mr. CONAHAN. Not explicitly, Mr. Chairman, but that number has not moved very much. What we have found in our current work is that there is a lot more inventory out there in both the needed and the unneeded—to use the Department of Defense word the "unrequired" area than we reported on last year. That is a new development, and we are concerned with it and we are pursuing it to see why that occurs and what the final numbers are going to be.

Chairman NUNN. I hope you go back and check your definitions of "needed" and "unneeded" so that we can see if "unneeded" is a peacetime word or whether that definition changes in wartime.

Mr. BOWSHER. Yes, we would be pleased to do that. I would point out that those are the DOD classifications.

Chairman NUNN. You were using theirs. Well, let's sort of do——

Mr. BOWSHER. But still do a scrub on it.

Chairman NUNN. Right, because if it is—and I do not know that it is—actually used in war, then that puts another light on what is needed and what is unneeded.

Mr. BOWSHER. That is right.

Mr. CONAHAN. The wartime stocks, Mr. Chairman, are included in the so-called required category and not in the unrequired category. So, they might have used some of that unrequired, but certainly it would not have been from the wartime stocks. They are already there.

Chairman NUNN. Well, how about updating and let's make sure on that.

Mr. BOWSHER. Yes.

Chairman NUNN. I appreciate your being here. We have obviously been interrupted many times, and I wish that had not happened, but I know you understand. You have again been very helpful to us.

Mr. BOWSHER. Mr. Chairman, could I just raise one point with you?

Senator McCain brought up some major concerns of his there. We very carefully worked with the Pentagon on whether we should be going over there before the war started. Frank here did the negotiations with Secretary Atwood, and I think it would be good to get on the record just what our arrangement was with the Secretary. And also, we have been over there now very recently after the war meeting with the senior military officers in Saudi Arabia, and I think it would be good maybe if Frank could say what attitude he found in relation to GAO.

Chairman NUNN. Sure.

Mr. CONAHAN. We have received requests to do various aspects of the Desert Shield/Desert Storm operation. By early December, we had a couple dozen requests from both House and Senate committees and subcommittees.

We had notified the Department of Defense in the October/November time frame that we needed to go to Saudi in connection with a number of those reviews. We had a dialogue with them, and finally in mid-December, Secretary Atwood asked if we would just go over on one review before the mid-January time frame and that any additional work after that we could revisit. That one review was the Apache helicopter job that was referred to by Senator McCain. So, that suggestion really came from the Department of Defense in terms of the one review that we would go to the region on before the mid-January time frame.

Chairman **Nunn**. Did they tell you they wanted you to do one review, or did they tell you if you are going to do one, do this one?

Mr. **Conahan**. They said that this is the one that we would clear you into the theater for, and we prefer not to clear you into the theater for the other ones.

After the mid-January time frame, we went back and told them that we were now ready to go back in and do the additional work that we had earlier requested them to do. This was heavy in terms of logistic support distribution and so on, as well as in connection with the contributions of our allies. We were particularly interested in seeing how in-kind contributions were handled and accounted for.

We were given clearance to go in on that. We put a team of about 14 people together. They went in in the early April time frame. I accompanied them, as a matter of fact, visited with the CENTCOM people, visited with the commanding generals of two of the forces over there, and a large number of other people, some of whom had entertained the earlier team on the Apache. I can only say that they were very courteous to us. They were very cooperative. The team that went in earlier expressed cooperation on the part of the military over there, and I just was unable to sense that there was the kind of concern that has been expressed with our visits over there.

Chairman **Nunn**. I appreciate your clarifying that for the record, and I am sure you will have a chance privately or in a hearing to have further conversation with Senator McCain on that.

Mr. **Bowsher**. Yes. We have asked to meet with Senator McCain to try to see if we can make him feel better about the fact of how we did our work, and why we did our work. So, we have been trying to see him, and we will continue to try to meet with him.

Chairman **Nunn**. Good.

Thank you very much for being here. You have again been a great help to us, and we will continue to have this dialogue as we go along through the year.

Mr. **Bowsher**. Thank you very much.

Chairman **Nunn**. Again, an apology for the interruptions.

[Questions for the record with answers supplied follow:]

Questions Submitted by Senator Alan Dixon

Senator **Dixon**. Mr. Bowsher, your statement notes that last year DOD reported that it had $34 billion in unneeded inventory last year.

The latest DOD inventory report shows that as of last September, the total amount of secondary item inventory that is not currently planned for use in the next 2 years dropped to $29 billion, a 15 percent reduction in 1 year.

This report also shows that the potential excess inventory within these totals dropped by 20 percent, from $10.1 billion to $8.1 billion.

Does your work suggest these figures are not accurate, and that the DOD inventory management problems are getting worse?

Mr. **Bowsher**.We are examining the recent changes as part of an ongoing review, but we have not yet seen the backup for the report (Supply System Inventory Report, September 30, 1990).

The DOD report indicates that the total inventory value dropped from $109.5 billion in 1989 to $101.9 billion in 1990, including "reductions in inventory value for materiel in need of repair and inventory with decreased market prices." Thus, different methods of valuing inventory appear to have been used in the 2 years. For otherwise similar inventories, the effect of such a change in methods would be to show a lower inventory value. We expect that our report including comments on these changes will be issued in about 2 months.

Without consistent measures it is difficult to assess the degree of progress in solving inventory management problems. Our statement regarding problems of greater magnitude than previously reported refer not to the changes discussed above, but to additional problem areas and their reported impact. We expect to report initial results of our ongoing evaluation of DOD's required inventories in about 2 months.

Senator DIXON. Mr. Bowsher, last year you told the committee that the $34 billion in unrequired or long supply inventory in DOD "will probably never be needed or used."

Logistics officials told the Readiness, Sustainability and Support Subcommittee last week that much of the inventory classified as unrequired or long supply is ultimately used by the military services.

Here are some items which the Defense Logistics Agency said were included in the $34 billion category of "unrequired" inventory last August 1, but which turned out to be essential in Operation Desert Storm: [260,000 sand bags, 732,000 sets of body armor, 200,000 sets of the desert uniform, 800,000 yards of desert camouflage, 202,000 night desert parkas, 515 coffins and 5,325 body bags]

My question, Mr. Bowsher, is whether GAO has done any systematic analysis of how much of the unrequired inventory in DOD was used during Operation Desert Storm?

Do you agree with the position of DOD logistics officials that a large portion of this unrequired or long supply inventory is eventually used by the military services?

Mr. BOWSHER. If, as stated by DOD, unrequired inventory were used after the second year, it logically could be expected that much unrequired inventory would be used in just a few years. Eventually, a very large portion would be used. In such a situation, we would still consider purchases so far ahead of need to be wasteful. However, our past work has indicated that many unrequired items have little potential for future use. In our March 1990 report on Navy ship and submarine parts, we estimated that about 140,000 of the 183,000 line items in unrequired categories should also be considered for deletion rather than being retained for long-term use.

As we stated in the cited testimony, the $34 billion in inventory was for items identified by DOD as not needed to meet current operating or war reserve requirements, and we qualified our additional oral comments.

We have further analyzed DOD's inventory as part of an ongoing review of DOD's required inventory. However, detailed data to cover Desert Storm activity through the cease fire have not yet been received from DOD. Thus, analyses for the entire period of the conflict are not yet complete.

QUESTIONS SUBMITTED BY SENATOR STROM THURMOND

Senator THURMOND. Mr. Bowsher, if we were to follow your advice, that "the dramatic decrease in tritium requirements provide additional time to evaluate outstanding issues before restarting the Savannah River reactors," we would be in the position that if, after restart, it is necessary to suspend operation or reduce power for any reason, we would have to start recalling the stockpile. Is that wise?

Mr. BOWSHER. First of all, I think it is important to note that GAO has never advocated unnecessarily delaying restart of the Savannah River reactors. However, since the reactors were shut down in 1988, DOE has had to delay restart several times because of safety and health concerns and unexpected restart problems. Many of these concerns and problems are still unresolved. Further, our report (*Nuclear Materials: Decreasing Tritium Requirements and Their Effect on DOE Programs*, GAO/RCED-91-100, February 8, 1991) points out that there is currently sufficient tritium to service the stockpile for several years. If additional time is needed to ensure that the Savannah River reactors can operate safely, it is available. Taking the time to resolve outstanding concerns and problems now while a several-year "cushion" of tritium exists—even if it means a short delay in restart—will help ensure that reactor operation will not need to be suspended or power reduced after restart, when the tritium cushion may not be as substantial.

Senator THURMOND. Mr. Bowsher, the GAO has been very critical of the Department of Energy on the issue of tritium requirements. Essentially you maintain that all requirements can be met from current supplies and that there is no rush to restart K reactor. But If they do as you suggest, they will have no reserve if there is any future problem with K reactor. That is why there has always been a presidential directive to maintain a tritium supply. Why do you believe DOE should now change?

Mr. **Bowsher**. We would not advocate delaying K reactor restart for no reason. However, we believe that K reactor restart could be delayed, if needed, to address safety and health concerns and restart problems. The time is available because drastically reduced projections of tritium requirements have created a several year "cushion" of tritium supplies. In effect, the cushion is a reserve of tritium that is already in existence. K reactor restart could be delayed several years, if needed, before this cushion would be depleted and DOE's ability to service nuclear weapons would be affected.

I would also like to point out that the reserve requirement has not always been is existence. The 1990 stockpile requirements are first to include a tritium reserve. In addition, the tritium reserve required by the President is to be established after the Savannah River reactors are restarted. The current tritium cushion created by decreased requirements and retired weapons actually puts DOE in a position of having a tritium reserve before restart.

DEFENSE SPENDING LESS THAN INTEREST ON NATIONAL DEBT

Senator **Thurmond**. Mr. Bowsher, in your statement you note that next year, for the first time, we will be spending more on interest on the national debt than on the Nation's defense.

This is an interesting statistic. Perhaps you could explain its significance or utility in relation to the hearing today.

Mr. **Bowsher**. I believe any discussion of national spending plans and priorities should include the growing threat to this Nation posed by the ever increasing national debt. The Nation's ability to compete economically with other advanced nations, that devote much less of their national resources to defense, has been seriously challenged in recent years. The nearly $300 billion a year presently going to finance the debt reduces this country's ability to invest in critical technologies and more efficient production capabilities needed to compete in world markets. If we are to continue serving as the world's military and political leader, other counties will have to share in the cost of this defense burden as they have in the recent operations in the Persian Gulf.

Senator **Thurmond**. Last year, Congress enacted legislation establishing Chief Financial Officers in the Executive Branch Departments, including DOD. This legislation was strongly supported by the GAO. What near-term impact do you expect this legislation to have to address your criticisms of DOD's financial management systems?

Mr. **Bowsher**. In the near-term, the financial audits of DOD's revolving funds mandated by the CFO Act are expected to result in (1) identifying weaknesses and deficiencies in those funds' financial systems and operations which merit management's attention and (2) the compilation of more relevant and reliable financial information for use by management and the Congress. DOD audit organizations, including the DOD Inspector General, Air Force Audit Agency and Naval Audit Service are currently preparing for and planning audits of various revolving funds. Most of DOD's revolving funds have never been subjected to comprehensive financial audits and as GAO's experience in conducting first-time audits has shown, such audits generally disclose previously unidentified deficiencies.

Although DOD's current systems produce financial information that is clearly inadequate for monitoring and managing operations, the CFO Act directs the DOD Chief Financial Officer to develop and maintain an integrated accounting and financial management system that complies with applicable accounting and internal control standards and requirements. The Act's increased emphasis on the need for reliable financial information and the requirement of obtaining annual audits is expected to (1) increase management's awareness of the need for more accurate information on the real costs of conducting operations; and (2) serve as a basis for developing new systems which will correct existing systems' deficiencies. Already, we have noticed that as DOD audit organizations are planning and preparing for the audits, there is an increased awareness of the financial management problems facing DOD and the need for improvements in the way the department conducts its financial activities.

DOD PLANNING FAILS TO ACCOMMODATE CHANGES IN WORLD SITUATION

Senator THURMOND. Mr. Bowsher, in your statement on page 2, you state that "Because of the uncertainty of specific threats to U.S. interests that may emerge in the future, DOD's plans and programs will to some extent always be catching up to events." Yet, in your report issued in February, you make no recommendation for addressing this problem.

How do you propose to deal with the unpredictability of future world events and the continuing pace of developments in Europe and the Soviet Union which we have witnessed over the past year and a half?

Mr. BOWSHER. DOD's 2 year Programming, Planning, and Budgeting process was not designed to respond quickly to rapid and drastic threat changes. DOD officials state that it is still one PPBS cycle from fully integrating major changes in threat since 1989. Fortunately, the future threat is greatly reduced from the threat of several years ago and future threat changes will likely be of much less magnitude. Accordingly, a change to shorten and make more flexible the PPBS process is not urgent at this time, particularly if DOD implements its plans to develop a more flexible force capable of responding to a variety of contingencies and threats.

Senator THURMOND. Which do you believe is more important—a flexible planning system which is structured to deal with military requirements as they arise, or a system structured by traditional financing and accounting standards?

Mr. BOWSHER. We believe that a flexible planning system structured to deal with military requirements is possible without sacrificing financial and accounting standards. Flexibility in a planning system should include processes and procedures to insure the impacts of planning changes are fully reflected in the most current President's budget and outyear spending plan.

Senator THURMOND. Mr. Bowsher, you note that the fiscal years 1992-97 FYDP assumes $172 billion in savings dependent on future legislative action, management initiatives, and program terminations. You state the obvious, that "achieving the balance of these savings depends on a combination of congressional action and DOD's achievement of difficult tasks."

In past years, when DOD has proposed program terminations, what has been the congressional response? In fiscal year 1991, for example, of the total dollar value of programs proposed for termination by DOD, how much did Congress actually terminate? How many programs did Congress refuse to terminate?

Mr. BOWSHER. In fiscal year 1991, DOD proposed terminating 20 weapons programs for savings totaling $3 billion. Congress concurred with all but 5 of DOD's proposals and provided funding totaling $1.6 billion for these 5 programs. In addition, Congress provided $3.4 billion above what DOD had requested for weapons programs, including funding for weapons programs that were not proposed by DOD.

Senator THURMOND. Mr. Bowsher, early this year, you testified before the House Budget Committee that GAO estimated a total cost of $130 billion for the war, exclusive of combat. I have here a chart prepared recently by your staff which shows the current GAO estimate of $31.5 billion for the incremental cost of the war, exclusive of costs directly related to combat.

a. Compared with the DOD estimate, it appears that the total difference for noncombat incremental costs is $5.3 billion. Would you please tell us specifically which programs included in the DOD estimate of incremental costs with which you differ? Are any of these specific differences items which were included in the recently enacted supplemental appropriations bill for Operation Desert Shield/Storm? If so, please identify each of them.

b. Your chart shows estimated combat costs of $6.3 to $69.3 billion attributed to DOD, with the GAO estimate at the low end of this scale. Please explain in detail how you reached this estimate, what programs are included in the estimate, and the date and source of the DOD estimate for this category.

c. What is your current estimate of the total cost of the war, including baseline and combat costs?

Mr. BOWSHER. a. DOD has included in its estimate the increased fuel costs for all normal operations as well as Operation Desert Shield/Storm. As we testified in January and February before the House Budget Committee, we do not believe that this increase for normal operations is an appropriate cost of the operation and should not be covered by emergency funding legislation. In the recently enacted supplemental legislation, Congress allowed DOD to cover these costs but restricted the Department to use funds *only* from the Defense Cooperation Account and not from the $15 billion in appropriated funds. DOD estimated that its increased fuel costs would be about $2.8 billion for fiscal year 1991.

In calculating its estimate, DOD included funding for procurement items in both its monthly estimates and in a separate investment line. Our work indicates that DOD may have included some of the same items in both categories, thus causing a double-counting of the funding need. It appears that Congress may have allowed this double-counting to be included in the recent supplemental legislation. This additional funding could be as high as $900 million.

Other differences for which we do not have specific dollar figures come from the fact that DOD calculated its estimate from very early data which they continued to update, while we used actual obligations and DOD's estimated monthly obligation rates to calculate our estimate. For example, DOD estimated its military personnel costs by using a total callup of 360,000 voluntary and involuntary reservists. As of March 24, 1991, about 230,000 reservists had been activated. Thus DOD overestimated its military personnel needs at least by the amount it would take to pay 130,000 reservists. Also, DOD did not consider the assistance-in-kind that is being received from other nations for the operation. It appears that Congress, in the recent supplemental legislation, did reduce DOD's request to reflect some of the assistance received.

Since our April 25 testimony before the Senate Armed Services Committee, we have received DOD reports on actual costs incurred for the operation. We believe these reports will alleviate some of the concerns we have had with DOD's estimates, such as the costs for reservists and double-counting for procurement. However, other concerns, such as the fuel cost issue, still remain.

b. On February 22, 1991, DOD submitted a request for emergency funding to cover the costs of Operation Desert Shield/Storm. In supplemental information submitted with the request, DOD provided a range of combat costs per day based on the intensity of combat and losses incurred. These costs ranged from $150 million per day to $1.65 billion per day. The war lasted 42 days (Jan. 16 to Feb. 27). We multiplied $150 million times 42 days, which equals $6.3 billion, and $1.65 billion times 42 days, which equals $69.3 billion, to get a range of total combat costs.

According to DOD's supplemental information, combat costs include: increased operating tempo; maintenance; prisoner support; medical transportation; ammunition; missiles; and replacement of aircraft, naval vessels, and ground equipment and vehicles.

Given the intensity and length of the operation and losses incurred, we believe that the lowest end of the range ($150 million a day) is an appropriate total combat cost. Because some of the items DOD has included as combat costs may not be replaced, were covered through assistance-in-kind from other nations, or are covered in other areas of DOD's estimate, even this low figure may be too high. DOD has begun to include an estimate for combat costs in the reports it is now providing, which supports our belief that combat costs were at the low end of the range.

c. On May 15, 1991, we again testified before the House Budget Committee. At that time, we stated that we believed the cost of the operation may total more than $100 billion, including baseline and combat costs.

Senator THURMOND. Mr. Bowsher, one of the principal benefits of last year's budget summit agreement was the fact that the defense budget topline was set for several years in the future. Could you give us your assessment of the impact of such a stable funding level could have on DOD's planning and budgeting process?

Mr. BOWSHER. Funding instability has continually been a problem for DOD and inhibited them from planning long range projects with any certainty that funding will be available from one year to the next. Because the topline is now consistent with the Presidents budget it should help DOD plan at the higher levels.

In past years, DOD's Five Year Defense Program was considerably higher than the administration's 5 year plan. This seemed to provide an optimism of "getting well" in the outyears on the part of program managers whose major weapon system programs were experiencing schedule and performance problems resulting in greater funding needs or had initial cost estimates which were unrealistic. Therefore, the funding stability that the budget summit agreement should provide will be dependent on how well that stability is maintained by DOD and the Congress down through the major weapon system programs to avoid the type of optimistic planning that has occurred in the past.

QUESTIONS SUBMITTED BY SENATOR JOHN MCCAIN

Senator MCCAIN. I am particularly concerned with the quality of the GAO's work on the Apache. Please provide the fullest and most detailed answer possible to each of the following questions:

U.S. Army Apache's flew 18,711 hours from September 16, 1990 to March 15, 1991 and averaged in excess of 85 percent availability during this entire period (including 5,000 hours during February 15 to March 15). Each Army Apache unit consistently-achieved impressive operational readiness rates during Desert Shield and Desert Storm and presently continue to maintain rates well in excess of required Army standards in spite of the harsh, unforgiving environmental conditions and unpredicted conditions in SWA. How does the GAO explain these dramatic and unpredicted numbers in light of past criticism of Apache maintainability and readiness?

Mr. **Bowsher**. Note: Any discussion of the performance of the Apache or any other weapon in Desert Storm is preliminary, since actual performance information is still being aggregated by DOD.

Because readiness (in terms of availability) is influenced by many factors, including maintainability, it is difficult to pinpoint the exact reasons why the Apache's readiness rates were higher in Desert Storm than they were in peacetime. Overall, we think the Apache's improved readiness can be attributed to a series of intelligent and pragmatic steps taken by the Army to effectively manage the difficult task of supporting the Apache in a harsh environment. Based on our visit to Saudi Arabia in January 1991, specific factors that enabled higher readiness rates include (1) extensive preparations made before deployment, such as the allocation of increased numbers of spare parts and maintenance personnel, (2) the collocation of several Apache battalions and higher maintenance and supply operations, that would normally be considerable distances from the battalions, (3) limitations placed on the Apache's flying hours, which reduced the hours flown by Apaches in theater to approximately the hours flown during peacetime, and (4) the overall high priority of maintenance support in the theater, particularly for parts deliveries.

Senator **McCain**. Apaches flew an outstanding Desert Storm record, and only lost one aircraft due to combat during their multitude of missions. No Apache crews were lost. Safety and survivability factors are evident in this record. Please, include in your analysis and evaluation of Apache, future comparison of other systems similar in technology.

Mr. **Bowsher**. Information available to us in our work before Desert Storm indicated that the Apache has a good safety record, and that its design has shown good survivability characteristics. We are currently reviewing the performance of the Apache in Desert Storm as well as that of other aircraft, and can provide information on safety and survivability during the operation when our review is complete.

Senator **McCain**. The Army has had a counter-point to every negative point the GAO has reported on Apache during audits and visits over the past 2 years. The points the GAO have brought up have not impacted the war-fighting capability of the Apache as evidenced by its outstanding performance in Desert Storm. The Army preliminary combat statistical information on Apache is impressive. How does the GAO account for the Apache being able to perform all of its required missions with great regularity and accuracy?

Mr. **Bowsher**. Our previous reviews of the Apache led us to conclude that the helicopter demands a high level of logistical support that the Army has been unable to provide. We have not questioned the Apache's warfighting capabilities, and in fact, we have pointed out that the helicopter is capable of excellent technical performance and that Army aviators find it to be far superior to the Cobra in all performance dimensions, including flight performance, night vision, target attack, and survivability. Our concern, therefore, has been whether the Army could provide the level of support necessary to take advantage of the Apache's advanced capabilities under sustained combat. In this context, the accuracy of the Apache's performance would serve to confirm assessments of the helicopter's combat capabilities. On the other hand, the regularity of the Apache's combat performance must be put in the context of the helicopter's utilization rate—which appears to be quite low compared with its requirements. Thus, while the level of support provided to the Apache may have been sufficient to sustain Desert Storm operations, whether the Army can provide adequate support for the sustained, high-intensity combat operations for which the Apache acquisition was justified may not yet be resolved.

Senator **McCain**. The Army has repeatedly opened their books down to the unit level and provided the GAO status of continued reliability fixes, improvements to the maintenance and logistics system, readiness rates, manning levels; yet, Army aviation does not seem to get any recognition by the GAO for their extraordinary efforts under wartime conditions. The system worked. Why not recognize the Department of the Army and Army aviation for the job well done?

Mr. **Bowsher**. The Army has been cooperative in providing us access to the people and records associated with the Apache. In February 1991, when we testified on the results of our visit to Saudi Arabia, we commended the Apache commanders, crew, and maintainers for their ability to maintain high availability rates under harsh conditions, particularly in light of the limited resources at their disposal. While the Apache's high readiness rates may be the direct result of good logistical support provided by the Army in theater, it would be premature to conclude that all major problems have been solved.

Senator McCain. The GAO completed a report on Apache last year, went to Saudi Arabia after that report was published and now are on a second trip to Saudi Arabia. A great deal of the findings by the GAO during their visits to Army Apache units deal with issues that involve the Army Aviation logistical support system—supply, maintenance and transportation and are across the board issues with respect to all army aircraft. Why does the GAO continue to focus solely on the Apache?

Mr. Bowsher. A good portion of the findings contained in our 1990 Apache report do, in fact, address issues that apply to other Army aircraft—they are not necessarily unique to the Apache, although they may be more pronounced on that program. For example, in the report we point out that the Cobra helicopter also flies fewer hours than aircraft from the other services, suggesting the problems that limit the Apache's hours may apply to Army aviation in general. This report and the follow-on work in Desert Storm focus on the Apache because they are in response to specific congressional requests on the Apache. At the same time, we have active assignments on the Light Helicopter and Special Operations Aircraft programs, as well as on several ground systems.

Senator McCain. Are the same personnel that performed the logistics audit now doing the operational performance audit visit? Are any other Army systems being examined for their operational performance by GAO? Any other Army Aviation Systems? Please, provide us your analysis of performance on Apache compared to other similar systems when available.

Mr. Bowsher. The same people that conducted the logistical support review are now conducting the operational performance review on the Apache. We are also conducting reviews of the Army's water purification equipment and the Bradley vehicle's performance during Desert Storm. These assignments are in response to congressional requests. We do not have any assignments on other Army systems used in Desert Storm. We do plan to review the field performance of other Army systems in the future.

Senator McCain. The single most important factor and detriment to Apache readiness was due to the May 1989 storms at Fort Hood, Texas resulting in damage to over 100 aircraft and a heavy demand on the supply and complete logistics support system. If your analysis had accurately factored this act of nature out, would you not agree with the Amy that Apache-readiness would have met or exceeded all standards?

Mr. Bowsher. Throughout our review of the Apache last year, we were concerned with the effects of a severe storm at Fort Hood, Texas, which damaged over 100 Apaches in May 1989. We examined the readiness database before and after the storm to ensure that our analysis of fully-mission-capable rates and accumulated flying hours was not unduly influenced by the storm damage. Even with these allowances, the storm's influence could not be completely eliminated because of the longer term effect it had on the overall demand for critical parts. In the final analysis, we believe that the storm did lower fully-mission-capable rates significantly during the latter half of 1989. However, while the storm exacerbated the Apache's availability problems, it did not cause them. Before the storm, fully-mission-capable rates were already significantly below the Army's goal and had declined with accumulated flight hours. In fact, our analysis covered 4 years worth of data (1986–89), while less than one of those years was affected by the Fort Hood storm. As a fleet, the Apaches did not meet the fully-mission capable goal in any of the years that preceeded the storm. In addition, one of the main events that led to the assignment being requested was the memo written by Colonel Kerr in February 1989 that signaled major problems with supporting the Apache in the field.

Senator McCain. How do the Apache units compare in terms of an overall systems approach (operational availability (readiness), unit manning levels) with Air Force and Navy aviation systems similar in technology? Is the Army about right on this considering the Apache leads the fleet and exceeded most all Army aviation readiness levels in Saudi Arabia? Provide service to service comparisons of Apache versus F-16 or other similar systems?

Mr. Bowsher. Although our 1990 report concentrated on the Apache, we did gather some data from the other services to compare how they operated and maintained their tactical aircraft with the Apache. Because the other services have had more experience with operating and supporting sophisticated aircraft, we concluded that they had valuable lessons learned that the Army could apply to the Apache. For example, we found that the Apache and the Army's Cobra fly far fewer hours than do tactical aircraft in the other services. This information is shown in the table below.

Monthly Flight Hours

Service/Aircraft	Per
Army:	
AH-64 Apache Helicopter	12.9
AH-I Cobra Helicopter	11.2
Air Force:	
F-16 Falcon (fixed wing)	29.7
A-10 Thunderbolt (fixed wing)	35.8
Navy/Marines:	
F-18 Hornet (fixed wing)	39.0
AV-8B Harrier (fixed wing)	33.6
AH--1 Cobra Helicopter	27.7

We also found that both the Marine Corps and the Air Force devote much larger organizations to maintaining and supporting their tactical aircraft. The Marine Corps has 225 maintenance personnel for a squadron of 12 Cobras and 12 UH-1 Hueys—more than twice the number of people for fewer and less complex helicopters than in an Apache battalion. This level of support enables the Marines to operate two maintenance shifts per day and to conduct flight operations 24 hours a day. The Air Force devotes about the same ratio of people at the unit level to maintaining and supporting a squadron of 26 F-16s. The Air Force organization also supports two maintenance shifts per day and provides two crew chiefs per aircraft versus one for each Apache. These high levels of support are a major reason that Marine Corps and Air Force aircraft fly so many more hours than the Apache does.

Senator McCain. Most of the information on Apache reported by the GAO during visits over the past 2 years has been negative on dated and known issues. Why hasn't the GAO given any credit to the Army for the joint industry/government Apache Action Team (ATT) corrective actions already underway to take care of known deficiencies? Why hasn't the GAO highlighted any of the many significant corrective actions taken by the Army?

Mr. Bowsher. In our 1990 report on the Apache, we give credit to the Army for the creation of the Apache Action Team (AAT), and discuss at some length its corrective actions. In particular, we discuss the AATs actions to improve reliability, increase parts supply, increase the number of maintenance personnel, and to overcome problems with maintenance equipment. We have been careful not to laud the results of these efforts prematurely for several reasons. First, while some of these actions were beginning to show promise during our review, most were a year or more away from proving their effectiveness in the field, and in fact, most improvements were not incorporated into the fleet as it deployed to Saudi Arabia. Second, some of the reliability and support problems had been evident since the early 1980s, and persisted despite the formation of several corrective action teams in the intervening years. Third, because the Army had never operationally tested the Apache at the battalion level under anticipated combat intensities and because of flaws in test measurement criteria, it was not clear that the sum total of the AATs actions would amount to solving the problem of sustaining a high tempo during combat. In the absence of such information, which would shed light on the relative contribution of the numerous factors that affect availability (reliability, training, manpower, manuals, parts availability, ease of repair, organizational structure, etc.) we believed it was difficult to determine whether corrective actions were properly focused.

Senator McCain. Can you offer any explanation why your previously reported findings did not impact the war-fighting capability of the Apache? Please, provide for the record an update of your findings with respect to current operational information on the Apache.

Mr. Bowsher. In our previous report, we did not question the warfighting capability of the Apache, but rather the Army's ability to fully exploit that capability under sustained, intensive combat operations. It is clear that the Apache was able to demonstrate its excellent reconnaissance and attack capabilities during Desert Storm. The sustainment side of the equation is less clear because of the number of variables involved. In our visit to the Apache battalions in Saudi Arabia, battalion personnel informed us that the reliability and maintenance workload of the Apache had not improved substantially, which is understandable because most corrective actions had not yet been incorporated into the aircraft. However, other actions taken by the Army did improve the Apache's readiness and may have contributed to the mission success of the Apache in Desert Storm. These actions include the extensive preparations made before deployment, increased availability of spare parts to those battalions in theater, and limitations placed on the Apache's flying hours to conserve resources for combat. In addition, maintenance personnel were much more productive than they were in their home bases. According to figures released by the Army, the Apache did not sustain a high operational tempo during Desert Storm—on the order of 14 hours per aircraft per month (compared with 100 hours per month contained in the Apache's requirements document). If the Apache's main theater of operations is to remain the advanced threat of central Europe, then its ability to sustain a high combat tempo will likely remain an open issue. On the other hand, if theaters such as those represented by Desert Storm are to be the Apache's main environment, then it is possible that the Apache's supportability is already sufficient, although such theaters may not justify the quantities of aircraft purchased.

Senator McCain. The Army has reported that only approximately 280 contractor personnel were available in Saudi Arabia to support all of Army aviation aircraft (not just Apaches) at the intermediate maintenance, supply and special repair facility levels. Have your analysts been able to break out the percentage of this support dedicated to other aircraft? How does this number of contractor personnel compare to what was available in the other services?

Mr. Bowsher. We have not yet completed our analysis of the contractor support provided to Army aircraft and to aircraft from the other services. We will provide this information when the analysis is complete.

Senator McCain. To what extent has the GAO found that Army Aviation had numerous successes during the Gulf war, and did innovative and creative things in an extremely harsh, tough and demanding environment?

Mr. Bowsher. We have not yet completed our review of the Apache's mission performance during Desert Storm. Nonetheless, it is apparent that the Apache enjoyed numerous mission successes during the operation. Certainly, this is encouraging news and something the Army can be proud of. In our visit before the outbreak of hostilities, we did observe innovative steps taken by the Army to conduct operations in the harsh desert environment. Examples of these include protecting the Apaches' main rotor blades with a laminate to reduce sand damage, and the expedited parts system—"Desert Express"—put into place by the Army. By no means the least of our impressions was the enthusiasm, dedication, and quality of the soldiers operating and maintaining the Apaches in theater.

Senator McCain. The GAO previously reported the main rotor blade on Apache had to be replaced every 164th hour of service. Army data indicates approximately 95 percent of all rotor blades purchased by the Army during the past nine years are still in service and the Army reports that Apache had less blade removals than any other Army aviation aircraft serving in the Gulf. Improved Apache blades are exceeding 1,500 hours between repair requirement. Is this consistent with your requirements?

Mr. Bowsher. In 1990, we reported Army data that showed Apache blades averaged about 164 hours before having to be removed for repair. If repairable, blades are returned for service and reused—thus it is possible that 95 percent of the blades produced are still in service. The blade repair data we obtained excluded those blades damaged in the Fort Hood storm. During our visit to Saudi Arabia, Apache personnel informed us that the Apache blades were less affected by the sand than other helicopters, reflecting the fact that the Apache was among the newest helicopters deployed and whose design considered desert operations to a greater extent. Another contributing factor may be that according to preliminary data released by the Army, the Apache flew the least of the Army helicopters in theater. The Army has informed us that improved Apache blades are achieving much higher hours between repairs on a test aircraft. We are currently reviewing such efforts to improve Apache component reliability, including the improved blade. If the blade achieves 1,500 hours between removals for repair in the field, it will have met the Army's reliability requirement.

Senator McCain. The Apache has recently demonstrated its capabilities in combat, which could equate to the most stringent of operational tests. Does the GAO still support the recommendation for the Army to conduct a "combat-like" evaluation of the Apache? Please, provide your rationale for such an exercise.

Mr. Bowsher. GAO still supports the recommendation to operationally test the Apache battalion in a combat-like environment—not to demonstrate its warfighting capabilities, but to ensure that the Army can take maximum advantage of those capabilities. Desert Storm demonstrated once again that the Apache's capabilities are well worth the effort. Clearly, there will be lessons learned for Apache operations from Desert Storm. However, it is not apparent that much experience was accumulated regarding employment of full battalions under sustained combat tempos. We believe that if the Apache is to be highly utilized in sustained combat, the Army must demonstrate the effectiveness of its corrective actions, and must explore options beyond incremental changes to the Apache's current operation and support structure to find the optimal mix of aircraft and skilled people to take full advantage of the Apache's advanced war-fighting capabilities. While the Apache's performance in Saudi Arabia may provide some of this needed information, depending on the number of helicopters and the intensity level involved in the operation, we believe that an operational test is the best vehicle to optimize the basic Apache fighting unit—the battalion—and develop accurate information on what it takes to support the unit in combat. Such a test should be "no-fault"—oriented toward discovering information rather than towards measuring success or failure. We believe that the Apache can further benefit from the experiences of the other services regarding data collection, organizational structure and management, and other practices that enable them to get more from their aircraft.

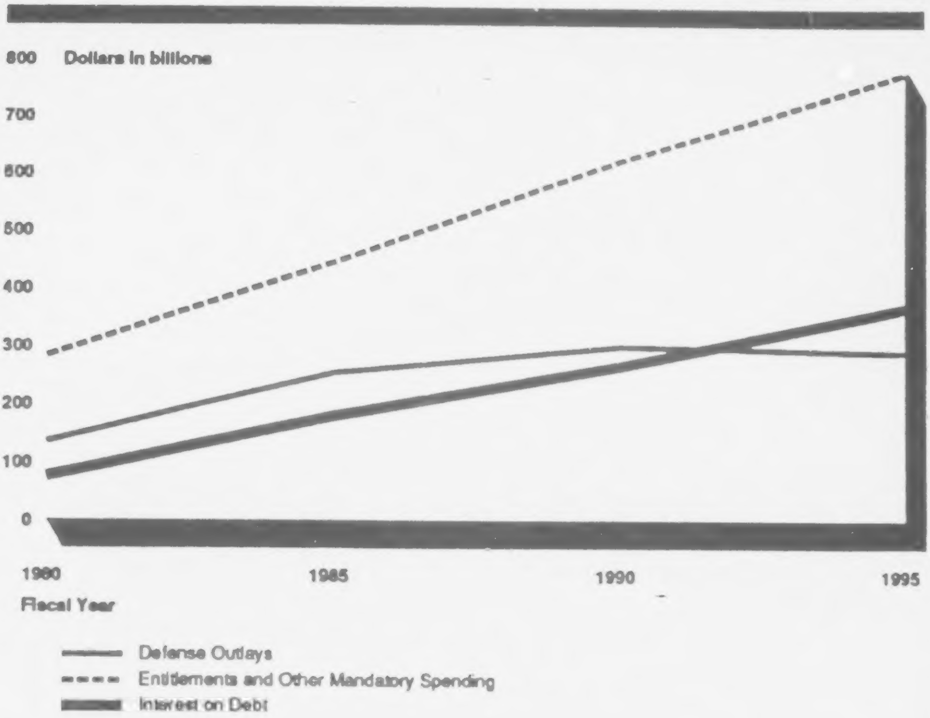
Senator McCain. Turning now to your testimony on the FYDP, on page 2 you show a table comparing defense expenditures to the interest on the deficit. Please provide a version of this table that does include the trust funds, and which shows the trend in entitlement programs.

Please also indicate your estimate of the relevant extent to which the trend in entitlements programs and defense spending have contributed to the growth of the current deficit over the last 20 years.

Mr. Bowsher. We have attached a chart that adds entitlement and other mandatory spending to the chart in our statement showing defense outlays and interest on the public debt. The chart indicates that entitlement and other mandatory spending is considerably more than interest on the public debt. Entitlement and other mandatory spending includes most trust fund expenditures, so we have not provided a separate line for trust funds.

The growth in entitlement and other mandatory spending has far outpaced the growth in defense outlays. This suggests that entitlement and other mandatory spending has contributed more heavily to the growth of the deficit than has defense outlays.

Comparison of defense outlays, entitlements and other mandatory spending, and interest on the public debt



Senator McCain. You state in your testimony that "It is not clear whether force structure reductions have been based simply on budgetary considerations or on in-depth evaluations of threat, risk, roles, missions, and functions."

Have you asked the Secretary of Defense or Chairman of the Joint Staff whether they have conducted such evaluations? Have you read the report of the Secretary on the fiscal year 1992 budget request, the Chairman's annual net assessment, and the testimony this committee has received on strategy? Have you read the initial statement that the Secretary and Chairman presented on the new strategy' on August 2? Is there really any doubt in your mind that such in-depth evaluations have taken place?

Mr. Bowsher. We have not spoken with the Secretary of Defense and the Chairman of the Joint Staff. We have, however, read the Secretary's testimonies before several congressional committees in support of the 1992 budget request. We have also read the 1991 joint military net assessment and the testimony this committee has received on strategy. While we have not read the initial statement that the Secretary and Chairman presented on the new strategy on August 2, we have read the President's remarks given at the Aspen Institute on that day. We have also read speeches and testimonies given by the Secretary and the Chairman since August 2 concerning the new strategy, including the Secretary's September 6, 1990, speech before the International Institute for Strategic Studies and the Chairman's August 30, 1990, remarks at the 72nd annual National Convention of the American Legion.

The documents you cited provide the Pentagon's proposals for what it expects the structure of military forces to be at some point in the future. They identify four military force packages (Strategic, Atlantic Pacific, and Contingency forces) and four basic military supporting capabilities (Transportation, Space, Reconstitution, and Research and Development). The Secretary, in submitting the Department's fiscal years 1992-93 budget request, stated that the new force structure should be in place by the end of fiscal year 1995. In addition, the 1991 Joint Military Net Assessment identifies trends in military manpower and critical skills for 1995 and 1999, and in "major presence forces" in Europe, Southwest Asia, the Pacific, and Latin America for 1999.

None of these documents, however, provide detailed information about the kinds of forces that DOD has determined are needed to carry out the new strategy, including the mix of skills needed to operate the weapons the forces will have at their disposal; how large those forces should be; what mix of Active and Reserve are necessary; and where those forces should be located. These specific determinations should, in our opinion, provide the basis for (and precede) decisions on deactivating units or converting them from active duty to reserve status.

Furthermore, DOD's 2-year Programming, Planning, and Budgeting process was not designed to respond quickly to rapid and drastic threat changes. DOD officials state that it is still one PPBS cycle away from fully integrating major changes in threat since 1989.

Senator McCain. You make repeated references to the difficulties the Department is likely to encounter in achieving $172 billion in savings during the coming FYDP. You do not provide any detailed analysis of the problems by category, or spreadsheet like assessment of the problems and risks. Please provide such a detailed risk assessment for each major saving that you believe presents a substantial risk.

Mr. Bowsher. The purpose of this portion of our statement was to advise the committee of the extent to which the FYDP depended on achieving savings to stay within budget totals. As we reported in our statement, based on more recent data than was available at the time the FYDP was prepared, the FYDP overstates base closure savings by $5.5 billion. In addition, the FYDP includes $1.1 billion in revenues expected from the sale of Federal land based on the 1988 base realignments and closures. It is not certain that such revenues, if realized, would be made available to DOD.

Regarding program terminations, we believe the previously proposed termination of the F-14D aircraft and V-22 osprey tilt rotor aircraft illustrates the difficulty of terminating programs. The dire emergency supplemental appropriations act for fiscal year 1991 requires DOD to release $987.9 million approved in the 1991 budget for the F-14 remanufacture program and $200 million approved in the 1989 budget for the V-22 Osprey tilt rotor aircraft program even though DOD had planned to terminate these programs.

The FYDP also includes $10.7 billion in anticipated reduced payments to the military retirement fund which would result from a revised method for calculating the amount of money set aside for future retirement pay. This revision would reduce the amounts set aside and make the savings available for distribution to other DOD accounts. Revising the retirement accrual method, however, will likely require amending existing legislation. As with any legislative proposal, it is not possible to predict final congressional action.

A significant portion of the $172 billion in anticipated savings is the $70 billion DOD anticipates achieving through a number of defense management review (DMR) initiatives. As with any new initiative, it is not certain that these anticipated savings will be fully achieved. In December 1990 we reported that most of the savings estimates identified in the DMR were based primarily on management judgments and not supported by historical facts or empirical cost data. While this does not mean these savings will not be achieved, it does indicate that the reliability of the estimates may vary.

Senator McCain. Please provide a detailed analysis of the reasons the FYDP overstates base closure savings by $5.5 billion, showing the reasons for each base or realignment that that (sic) not produce such savings? Given the fact the GAO extensively examined the work of the BRAC, which of these problems did the GAO detect, and what was the reason the GAO did not detect each of the other problems?

Mr. Bowsher. The February 23, 1991, FYDP reflected a net $6.3 billion in anticipated base closure savings ($6.9 billion savings shown in the undistributed contingencies account minus $0.6 billion in base closure costs shown in the Base Realignment and Closure Commission account). On April 12, 1991, DOD released its Base Closure and Realignment report showing a net savings of $0.8 billion for the fiscal year 1992 to 1997 period. The report estimated savings of $6.5 billion rather than the $6.9 billion estimated in the FYDP and costs of $5.7 billion rather than the $0.6 billion reported in the FYDP. Consequently, the FYDP's projected savings are $0.4 billion higher and the cost $5.1 billion lower than the FYDP estimates, resulting in the FYDPs higher net savings of $5.5 billion.

Our statement reflected our comparison of the FYDP and the subsequently released Base Closure and Realignment report. Because the FYDP was completed almost 3 months prior to the base closure report, it was of necessity based on earlier data. The revised data further illustrate the changing nature of anticipated savings.

Senator McCain. Given your comments on page 8 of your testimony, what evidence does the GAO have that the Administration was not working actively on a net strategy on March 22, 1990, or could have produced a strategy more quickly than it did?

Mr. Bowsher. We are not criticizing DOD for not having a new military strategy on March 22, 1990. We are citing the criticism of the Chairman of the Senate Armed Service Committee. Further, neither we nor (to our knowledge) the Chairman are critical of DOD for not developing its strategy sooner.

Senator McCain. Do your remarks on pages 10-11 about DOD failing to be responsible to congressional direction to expand sealift capability mean the GAO feels that such direction was and is cost-effective? What is the GAO's analysis of the extent to which current legislation would solve the problems GAO has found?

Mr. Bowsher. GAO has not taken a position on either the adequacy or the cost-effectiveness of the additional fast sealift funds Congress has appropriated, nor have we analyzed the extent to which current legislation will address sealift problems.

On page 10 and 11 we said "Over the past several years, DOD has not been responsive to congressional direction to expand sealift capability. In fiscal years 1988-90, for example, DOD used almost half of the sealift funding provided by Congress for other programs." The data below shows that funds in fiscal years 1888 and 1989 were offered for other uses. Fiscal year 1990 fast sealift funds were first offered in their entirety but after that major reprogramming was withdrawn, DOD later cut fiscal year 1990 funds by slightly more than one-third.

[Dollars in millions]

	Amount appropriated	Amount used for other reasons
Fiscal Years:		
1988	$43.4	$43.4 (SSN-688)
1989	35.0	35.0 (Rescission)
1990	600.0	7.6 (Gramm-Rudman)
		217.6 (Mil Pay & CHAMPUS)

We believe the record is clear as we testified—DOD has been reluctant to spend fast sealift funds provided by the Congress.

On page 11 we also testified that DOD had not yet definitized plans to spend additional $900 million Congress added for sealift in fiscal year 1991. Although we have not received a DOD reprogramming or rescission request for fiscal year 1991 sealift funds, we had been told unofficially that a reprogramming was pending.

We also said that in looking at the lessons learned in the Gulf, DOD needs to look at the major factors that affected the amount of time it took to deploy our forces and what these factors mean for setting funding priorities in the 1990s. We also testified that we suspect that such analyses would question the historically low priority given to sealift. Since our testimony, DOD has issued an interim report on the Joint Chiefs of Staff-sponsored Mobility Requirements Study, which was initially started at congressional interim report on the Joint Chiefs of Staff-sponsored Mobility Requirements Study, which was initially started at congressional direction This study examines several different crisis scenarios for the late 1990s and the initial conclusions are that we need much more, and much faster sealift capabilities. The study also recognizes that the greatest shortfall is in our ability to surge troops and heavy equipment, and supports a larger investment in government-owned and controlled roll-on/roll-off ships capable of about 25 knot transit speeds. Although the study will not be finalized until late this year, the Secretary of the Navy has reportedly already directed the Chief of Naval Operations to commence development of the operational requirement for large, medium-speed roll-on-/roll-off ships.

GAO applauds the current DOD effort to more clearly define strategic lift requirements for the future. We hope that the Mobility Requirements Study will adequately account for the likely increased warning times we may have before the next major military deployment, and revalidate the least costly way to meet lift requirements between the three parts of the equation—prepositioned material on land and afloat; airlift and sealift. We also hope that the study will factor in likely CONUS and third-country logistics system capabilities to move our equipment to and from the ports of embarkation and debarkation. Additionally, we expect that any DOD plans to expand government-owned sealift assets will also carefully account for the numbers and skills of merchant mariners that would be necessary to crew these ships.

Senator **McCain**. What is the current status of your work on the C-17? What assessment of the C-141 have you made that indicates it can be kept in inventory longer than planned, in spite of the wear imposed by the Gulf War?

Mr. **Bowsher**. We currently have two assignments dealing with the C-17. The first is a review of the cost and schedule of the program, concentrating on identifying and, reviewing (1) the basis for the various estimates of the cost to complete the current contract and (2) technical problems that are likely to affect both program cost and schedule. The second, which we have just started, is a review of subcontractor management. The objectives of this second assignment are to determine (1) the extent that McDonnell-Douglas has taken or plans to take corrective action on the problems with their supplier management system identified by the Defense Plant Representatives Office and (2) the impact of congressional decisions to reduce the Air Force C-17 budget request on the supplier base.

We are currently reviewing the effect of the Desert Shield/Storm operation on the major airlift assets with particular emphasis on the C-141. Our primary objectives in this assignment are to determine (1) how the aircraft operated in Desert Shield/Storm and (2) whether the service life of the assets has been adversely affected by the increased use. As part of this second objective we are gathering information on whether options for extending the service life are available. According to Air Force officials, while the use of the assets, including the C-141, increased dramatically during the operation, the type of flying—long distance, high altitude—was not particularly stressful and may have had less impact on the service life of the assets than planned peacetime training uses.

AMRAAM

Senator **McCain**. You refer to the AMRAAM and B-1 bomber as "classic examples of weapons whose production started before the systems designs had stabilized." You state there are lingering doubts about their reliability. Please explain this statement in detail for each system. Exactly what are the lingering doubts regarding the B-1 and AMRAAM?

Mr. **Bowsher**. In May 1990, we reported in *Missile Procurement: Further Production of AMRAAM Should Not Be Approved Until Questions Are Resolved* (NSIAD-90-146, May 4, 1990) that the Department of Defense had approved the first 3 years of low-rate initial production in which 1,480 missiles were to be produced at a cost of about $2.4 billion, without demonstrating that AMRAAM was suitable for deployment. Moreover, AMRAAMs reliability was unacceptable and the Air Force had stopped accepting missiles from both contractors because of continued reliability problems. At that time, tests and analyses were continuing to identify design changes to improve AMRAAMs reliability and resolve production problems that had delayed and disrupted missile deliveries throughout the first production year. Although AMRAAMs reliability has improved since that May report, design and manufacturing changes over the last year to improve the missile's reliability have continued to delay and disrupt missile deliveries.

B-1B BOMBER

The Air Force declared the B-1B operational in September 1986 and accepted delivery of the 100th and final B-1B in April 1988. We have continually monitored the Air Force's progress in developing and deploying this aircraft and, mainly at the request of congressional committees, have issued numerous reports dating back to the early 1980s. The Air Force has taken corrective actions to resolve some of the problems we have identified over the years, e.g., terrain following and fuel leak problems. However, problems remain with the defensive avionics system, engine fan blades, and the anti-icing system, as summarized below.

Defensive Avionics System (A1Q-161A). We discussed the deficiencies of the B-1Bs defensive avionics system over 4 years ago before the House Armed Services Committee. We pointed out that problems with this system date back to 1982 when the Air Force adopted a concurrent approach to producing the system. The defensive system does not have the capabilities originally required against enemy threat radars. Therefore, the number of threat radars the defensive system would have to defend against has been reduced. The Air Force plans to compensate for the reduced

ALQ-161A capability by adding a radar warning receiver to the B-1B to assist it in carrying out its mission. The Congress has not funded this effort. Another specific lingering problem with the defensive avionics system relates to the capability of the system to display for the defensive system operator the precise location of enemy threats.

Engine Fan Blades. Between October 1988 and December 1990, five B-1Bs experienced engine failures as a result of broken engine blades. The problem has been attributed to cracks in the engine blades and deficient retainer rings that hold the blades in place. The Air Force appears to have a fix in hand to prevent the retainer ring from breaking but the basic problem of blades breaking may not be resolved for years.

Anti-icing System. We have pointed out that the anti-icing system that is installed on all B-1Bs has never worked. In the 1988-89 timeframe, the Air Force installed a prototype of a new system on one B-1B for testing. The test showed that the system could reduce ice damage to the engine but several problems needed to be resolved: the system overheated; the heating materials had to be removed with a chisel and hammer when the system failed—an intolerable maintenance practice—and high power needs of the anti-icing system caused concern that some of the aircraft's other electrical components would have to be shut down while the anti-icing system was in use.

Senator McCain. If the B-2 is an example of DOD's failure to moderate concurrency, exactly what risks are involved? What changes, if any, could be made in the B-2 program to deal with this situation?

Mr. Bowsher. Our work on several major weapon systems has illustrated that rushing into production before critical tests are successfully completed has resulted in the purchases of systems that do not perform as intended either in terms of operational effectiveness, or reliability and maintainability. This can require costly redesign and modification to production aircraft in order to achieve required capabilities.

As with many prior systems, we have recommended that the pace of funding and production for the B-2 program be limited until critical performance elements of the aircraft have been adequately evaluated. The early radar signature tests which were recently completed on the B-2 were very important tests, and provided data which are critical to determining whether the B-2 meets some very basic program goals. However, testing to date has not been operational in nature and comprises only about 4 percent of the tests planned on the B-2. Accordingly, GAO believes that the pace of the B-2 program should continue to be limited until more thorough demonstrations are completed of the aircraft's capability to perform its prescribed missions.

Senator McCain. You advance considerable criticism of DOD's failure to provide the financial reporting system recommended by GAO. Why do DOD and industry oppose such a system, and what is GAO's rebuttal to each of their concerns and arguments?

INDUSTRY COMMENTS

Mr. Bowsher. A major concern expressed by industry was that the confidentiality of their sensitive financial data would be compromised. They were afraid that the government would not be able to guarantee the security of the data. That was expressed by the comment "While the penalties are intended to dissuade disclosure, the likelihood of disclosure is high. The damage to a contractor from disclosure could be excessive and a means of recovery from damage should be specifically provided for."

Further, on this same issue, industry said, "We do not understand the Comptroller General's unwillingness to accept the work and, veracity of independent certified public accountants. The work of independent CPAs is tightly regulated and controlled by.the Securities and Exchange Commission. The GAO's refusal to rely on the work of CPA firms is without merit."

GAO RESPONSE

GAO's original proposal did require that GAO would have access to the financial data being submitted for verification purposes. However, that position has been changed and the proposal now would be for the verification of the data to be accomplished by the CPA activity that reviews the financial data being submitted for SEC purposes. We have adopted this position for several reasons. First, the data being sought at the segment level is the same data that is being submitted to the Home Office for inclusion in the firm's SEC submittal, and a CPA review could be simultaneous thereby reducing the costs of the new requirement. Second, in the spirit of single audit concept which is intended to reduce government oversight in circumstances where it is practical and the government's interests can be preserved, we believe that a review and certification by the CPA at the contractors location could adequately protect the government's interest and reduce program costs. Third, we believe that the review and certification of the data by the CPA at the contractor location would provide the protection of confidentiality of the data sought by the contractors.

ADDITIONAL INDUSTRY COMMENTS

In princlple, industry did not disagree with the concept of the necessity of obtaining feedback on what impact government procurement policies were having on contractor profitability. They were concerned, however, that there was no definition of what profitability measures would be used in these analyses. In September of 1990 GAO issued report *GAO/NSIAD-90-200BR GOVERNMENT CONTRACTING Financial Measures for Evaluating Contractor Profitability.* We believe the information will help dispel the fears expressed by industry on the issue of what profitability measures would be appropriate to be used for these analyses.

On the profitability measures issue, industry also expressed concern regarding what industry groups their profitability would be compared against. They believe that past comparisons to Standard and Poors (S&P) "comparable durable goods" was inappropriate and did not take into consideration the differences in risk that exist between defense work and the commercial work represented by the S&P category of durable goods.

GAO RESPONSE

At the request of Congress, GAO has undertaken a project to evaluate appropriate comparability criteria for defense work. We are in the final stage of issuing the report, but from the research we have done we agree with the industry position that commercial comparable durable goods measures, no matter how they are adjusted, do not provide adequate risk comparisons. We believe that risk assessment identified specifically with government work should be accomplished to provide suitable criteria against which to measure profitability of that government work.

Some other industry comments made on our Profitability Reporting Program report are as follows: ". . . is the cost of the program justified in comparison to the cost of occasional ad hoc studies?"

". . . the proposal should include a credible cost-benefit assessment."

GAO RESPONSE

We believe that the costs to the government and to the contractors for annual studies we propose will, in the long term, be less than the costs incurred to perform ad hoc studies such as has been the practice in the past. Some of the ad hoc studies done in the past have been:

1. An LMI *Defense Industry Profit Review* in 1969,
2. A 1971 GAO study,
3. Profit '82, done by the Air Force,
4. Navy profitability studies performed yearly,
5. Profit '76, done by DOD in 1975-6,
6. DFAIR, done by DOD and industry in 1983-5,
7. The MAC Group profit study, 1987-8.

In each of the above studies, new teams of personnel from both government and industry had to be assembled, new and different methodologies were used, and the data collected was different. The learning process of the data analysis had to be repeated in each case. The data to be collected under the system proposed by GAO are not unique or unusual. They flow from the contractors existing accounting and financial reporting systems. After initial start-up costs to develop a systematic method to report the requested financial data, recurring costs of such a program should be minimal.

DOD COMMENTS

DOD has expressed a belief that they currently have available all the information they require to assure themselves that the level of profitability of government contracts is appropriate. They cite as data available for this purpose:

1. Contract cost information from contractors books of accounts to which they have access.

2. Information from DD Form 1547 which describes the amount of profit negotiated by a contracting officer on a negotiated procurement.

3. Firm level financial data, through published corporate financial statements.

GAO RESPONSE

DOD point 1. It is true that DOD (through DCAA) can get access to individual contract cost input data. However, this data is not gathered and analyzed on a regular basis, but on a case by case basis when a problem is suspected. Additionally, such a contract by contract review can not take into consideration the financing aspect of the profitability question.

DOD point 2. The information from the DD Form 1547 is retrieved on a contract by contract basis, and as in point 1 above, does not take into consideration the effect of financing on contractor profitability. Further, it is only applicable to a portion of the contracts that DOD issues. According to DOD, only 30 percent of the contracts issued are negotiated using the DD Form 1547 weighted guidelines.

DOD point 3. We concur that the corporate financial statements do contain the type of data to make the proper profitability determination, however, this data is reported at the corporate, or firm level. However, in order to analyze what impact government policy is having on the government work being performed by a company, financial data of the same type provided for the firm is required from the segments with government contracts.

There is one additional point to be made on this issue. Partially at industry's urging, Congress included in the 1989 Defense Authorization Act a requirement for DOD to provide an 'Integrated Financing Plan. The purpose of the plan was to insure that DOD in its procurement and financing policies was not transferring more risk to contractors that was warranted by the amount of profitability the contractors were able to achieve on the government work involved. As of this writing, that plan has not been prepared and submitted. One reason for this is that DOD does not have available to it the data necessary to construct and report on such a plan.

ADDITIONAL DOD COMMENTS

"The GAO proposal would shift key decisions on profit from departmental experts with day to day procurement responsibility and experience to a new bureaucracy with no accountability for program success."

"Creation of profit policy and the measurement of its success must be left to the discretion of the procurement agencies whose missions and procurement markets will necessarily vary from each other."

GAO RESPONSE

The draft legislation proposed by FAO would not transfer the procurement responsibilities away from the procuring agencies. Further, it would not create a Profit CZAR who would dictate profit levels for all contractors as some in industry suggested. The GAO proposal recommended the establishing of an Administrator in the Office For Procurement Policy as the unit to collect and analyze the financial data received. While that Administrator would disseminate the results of the data, the responsibility for making or revising policy based on the results of the data must continue to rest with the procuring agencies.

Senator McCain. Exactly what basic research is DOD not funding that GAO feels is necessary? What is the GAO rationale for such recommendations, and what is the estimated cost of each action recommended by GAO?

Mr. Bowsher. In his August 2, 1990, speech at the Aspen Institute, the President stated that to prepare to meet the challenges we may face in the future, we must focus on an active and inventive program of defense research and development. In that speech, the President noted that we have seen technology revolutionize the battlefield. He also stated that "'we must realize the heavy price we will pay if we look for false economies in defense R&D."

Our statement includes analysis of the research, development, test, and evaluation portion of the defense budget done by the Congressional Budget Office, which shows declines in real funding. We are not recommending specific research activities, but believe that these real funding declines are in sharp contrast to the President's statements on the importance of defense R&D.

Senator McCain. You refer to a possible overlap between the functions of the Army and Marines Corp and Air Force and Army air support. Exactly what arguments do you present that these capabilities are redundant rather than synergistic?

Mr. **Bowsher**. We do not state that capabilities are redundant. However, either the Marine Corps or the Army's rapid deployment forces can handle any of the low intensity conflict operations that do occur around the world. Consequently, lighter forces do have missions that are duplicative, including rapid response, non-combatant evacuation, and show-the-flag activities. Similiarly, the Marine Corps has been used like or with the Army throughout this century in low, -medium, and high intensity conflict. Congress recognized these similiarities in its deliberations during the early 1950s.

Admiral Crowe, a former Chairman of the Joint Staff, has stated that in his view duplication of functions exists in the services, but that where it exists for strong national security reasons it should be continued. We are concerned about the nature and extent of future requirements for light forces in a changing threat environment and the most efficient and effective structure for these forces. Because the Army and Air Force have weapon systems that provide close air support, we also believe that DOD needs to consider whether these systems and functions complement or unnecessarily duplicate each other.

Senator **McCain**. Your remarks regarding Total Force Policy seem to require massive new defense expenditures and do not address the new priorities for Reserve forces. Exactly what steps does GAO, recommend to correct the situation, what would each step cost, and why would it reflect America's changing strategic priorities?

Mr. **Bowsher**. The thrust of my comments on the Total Force Policy is that while the policy is sound there is need for improvement in its implementation. Likewise: expectations about the levels of proficiency that can be achieved from a force that only trains part time must be realistic. For example, the Desert Storm experience indicates that it may not be realistic to expect Reserve combat forces at the brigade level to achieve the level of proficiency required to assume missions requiring deployment in the first 30 to 60 days of a contingency. Accordingly, we believe that the Army's plan to exclude these forces from its contingency corps and to assign them an early reinforcement mission is a prudent decision that is consistent with the objective of maintaining a force that has the capability to respond rapidly to the increased regional threats around the world. For the most part, the improvements needed to implement the Total Force Policy do not require increased defense expenditures. Rather, as I stated in my prepared remarks, they can be achieved through a reallocation and reprioritization of existing resources, improved program implementation, and improved internal controls.

Senator **McCain**. You repeatedly refer to the need for comprehensive review of all weapons programs, but you seem to ignore the ongoing review activities going on throughout the Department. Please list every weapons system you feel has had inadequate review by name, and explain your exact reasons for this recommendation, citing the review work that has not taken place or that has been inadequate.

Mr. **Bowsher**. Our comments on comprehensive weapons system reviews referred to the limited number of major acquisition reviews of the type discussed in the Secretary of Defense's April 26, 1990, testimony before the House and Senate Armed Services Committees. The Secretary specifically requested that these comprehensive airship and warship reviews be performed. They were led by the Under Secretaries of Defense for Acquisition and Policy and the Joint Chiefs of Staff, with threat assessments prepared by the Defense Intelligence Agency. The reviews included a reexamination of U.S. national security objectives and interests, the global threats to them, and the best strategies for countering those threats. These special reviews were limited to 9 of the approximately 100 major acquisition systems. We are currently examining DOD's other processes for reevaluation of weapons systems.

Senator **McCain**. You again cite $34 billion in unneeded inventory, and state that work underway indicates that the problems are much greater than previously reported. Please cite for the record each item of unneeded inventory, its value, the reason GAO concludes it is not necessary and comments on that item from any element of the Department of Defense, if applicable. References to reports are not acceptable as a substitute for this analysis.

Mr. **Bowsher**. Our testimony states that the $34 billion was reported by DOD. In its supply System Inventory Reports for September 30, 1988 and 1989, DOD reported $34 billion of secondary item inventory in categories that its regulations described as "excess to the approved force retention level."

It would no longer be possible for DOD to identify the specific items included in its $34 billion figure. In preparing its report, DOD drew from DOD components' inventory reports called stratification reports. The component's update their automated records periodically and they would thus no longer have access to itemized listings that accurately correspond to their portion of DOD's reported inventory.

The problems of greater magnitude than previously reported arise partly because of ongoing work which is finding that, in addition to the inventory identified by DOD as excess to the approved force retention level, questions also occur about much of the inventory that DOD identifies as within its approved force acquisition objective.

Senator **McCain**. You cite costs for Operation Desert Storm and Desert Shield of up to $100 billion. Please compare this analysis to the figures provided by the Department, and provided (sic) a detailed spread sheet to justify all the inputs to this figure and the broad categories in Figure 3.

Mr. **Bowsher**. We believe that there are three components to the cost of Operations Desert Shield and Desert Storms. One component is the baseline or peacetime cost to the United States of raising, equipping, and maintaining the force that was deployed to Southwest Asia. A second component is the additional cost of mounting the operations. A third component is miscellaneous costs, including debt forgiveness for Egypt, which is the largest miscellaneous element.

DOD and now, as required by the Persian Gulf Conflict Supplemental Authorization and Personnel Benefits Act, the Office of Management and Budget (OMB), limit their reporting to the operations' incremental costs. We have seen no evidence to dispute DOD's and OMB's reported costs of $31.6 billion through February 1991 but do have concerns about the inclusion of $1.6 billion in higher fuel prices as a cost of the Operations and the treatment of potential but as yet unknown rebates and credits resulting from any excess recapture of actual costs. We have also seen no evidence to date to dispute DOD's estimate of $12.2 billion for the post-combat phasedown and redeployment phase. We do, however, question the $16.2 billion residual cost, which is the difference between the sum of costs through February and post-combat phasedown and redeployment costs and OMB's total estimated cost of at least $60 billion. We question this residual because there are no data supporting it and because some funds are already available in DOD's fiscal year 1991 budget and DOD's post-combat phasedown estimate for the refurbishment of equipment used in the war, which is the major element of this residual cost.

[Whereupon, at 5:37 p.m., the committee was adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEARS 1992 AND 1993

TUESDAY, MAY 14, 1991

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

STRATEGIC ENVIRONMENTAL RESEARCH AND DEVELOPMENT PROGRAM

The committee met, pursuant to notice, at 2:05 p.m., in room SR-222, Russell Senate Office Building, Senator Sam Nunn (chairman) presiding.

Committee members present: Senators Nunn, Exon, Dixon, Gore, Wirth, Thurmond, and Smith.

Committee staff members present: Arnold L. Punaro, staff director; and Madelyn R. Creedon, counsel.

Professional staff member present: William E. Hoehn, Jr.

Minority staff members present: Romie L. Brownlee, deputy staff director for the minority; Ronald P. Kelly and George W. Lauffer, professional staff members.

Staff assistant present: Debra A. Rice.

Committee members' assistants present: Andrew W. Johnson, assistant to Senator Exon; John P. Gherhart, assistant to Senator Bingaman; Leon S. Fuerth, assistant to Senator Gore; Jefferson B. Seabright, assistant to Senator Wirth; Terence M. Lynch, assistant to Senator Shelby; James H. Bodner, assistant to Senator Cohen; Eric H. Thoemmes, assistant to Senator Coats; and Thomas L. Lankford, assistant to Senator Smith.

OPENING STATEMENT OF SENATOR SAM NUNN, CHAIRMAN

Chairman NUNN. The committee will come to order.

This afternoon the Committee on Armed Services meets to review the Strategic Environmental Research and Development Program. This program was a major initiative of this committee last year to organize and focus some of the resources of the defense establishment—the Defense Department, certain elements of the intelligence community, and the national security programs of the Department of Energy—on dealing with major environmental issues in this area. This program is designed to develop technologies and data for environmental restoration; waste minimization; hazardous materials substitution; global environmental research, including ozone depletion and climate change; and other environmental concerns such as energy conservation.

As these technologies are developed to meet the environmental challenges and needs of the defense community, it is expected that much of this effort can be transferred to other governmental organizations, as well as to the private sector. America must lead the way in marshalling a global response to the problems of environmental degradation.

The defense establishment and its enormous scientific talent, could, can, and should play an important role in this effort. The Departments of Defense and Energy face large clean-up efforts at their respective facilities and installations and little technology is available to conduct the work either at all or efficiently and economically. We have a long way to go.

The Department of Defense and the Department of Energy compliance with environmental statutes will require ever increasing technological advances in the future, particularly in the area of air emissions and hazardous waste disposal. The Defense Department is in a unique position to augment the capabilities of the civilian scientific community to conduct research on global environmental change due to the wealth of relevant information that DOD holds and that it can collect due to its ability to provide much needed super computing and other research assistance.

The start-up of the Strategic Environmental Research and Development Program has been somewhat slower than Senator Gore, myself and others who were involved in this, as well as the other members of the committee, had anticipated. And we want to hear from the governmental witnesses today as to where the program stands. This program is important to the committee and we intend to follow its progress very closely.

Senator Gore invested considerable time and effort during last year's authorization process to help create the program and to insure that the program was organized appropriately and adequately funded. And he will continue to play a key role for the committee in overseeing its implementation. We may very well, and probably will after this hearing, decide that we need other follow-up sessions.

Our witnesses for this afternoon are the Honorable John C. Tuck, Under Secretary of Energy, Department of Energy; the Honorable Jacqueline E. Schafer, Assistant Secretary, Installations and Environment, Department of Navy; Dr. John H. Skinner, Deputy Assistant Administrator, Research and Development, Environmental Protection Agency; Dr. Joseph V. Osterman, Director, Environment and Life Sciences, Department of Defense; Dr. Siegfried S. Hecker, Director, Los Alamos National Laboratory; and Dr. Bill Buzbee, Director, Scientific Computing, National Center for Atmospheric Research.

I would like to add a special thank you to Secretary Tuck not only for his strong support of the Strategic Environmental Research and Development Program, but for all of his efforts at the Department of Energy. John has worked very closely and cooperatively with this committee and the staff on a wide variety of issues. And John, I take this opportunity to thank you personally for your leadership.

Mr. TUCK. Thank you, Mr. Chairman. That is quite a compliment.

Chairman NUNN. Well, thank you. I would appreciate it if each of our witnesses would summarize their remarks as much as possible. We will review carefully all of your statements. We have a number of witnesses today, and we want to have time for a lot of questions.

We will start a little out of order, today, with Dr. Skinner, Deputy Assistant Administrator for Research at the Environmental Protection Agency. I understand Dr. Skinner has a longstanding out-of-town commitment that requires his departure at 3 o'clock. The committee will also, after the vote on the floor that I understand is coming around 2:30—meet at the Vice President's office to consider some military nominations. So when we break for the vote we will probably be gone about 15 minutes, and we will recess for that period and then come back. We do not have any other option. We have got to pass out some nominations, and it appears that we are going to meet and do it off the floor.

I will turn first to Senator Thurmond for any comments on behalf of the minority, and then I will ask Senator Gore if he has any comment.

Before we proceed, I will enter into the record the prepared statement of Senator Dixon.

[The prepared statement of Senator Dixon follows:]

PREPARED STATEMENT BY SENATOR ALAN J. DIXON

Mr. Chairman, it is a pleasure to welcome today such a distinguished panel to discuss the Strategic Environmental Research and Development Program.

I look forward to hearing how the environmental matters of concern to the Department of Defense, Department of Energy and the Environmental Protection Agency are addressed in this program, both through basic and applied research.

Environmental protection and compliance, pollution prevention, environmental restoration, environmental change and data analysis, hazard assessment, clean energy, and natural resource management are vitally important to ensure a safe and secure world.

I look forward to the testimony from our distinguished panel.

Thank you, Mr. Chairman.

Senator THURMOND. Mr. Chairman, thank you. I want to welcome all our witnesses and to save time I ask to put my statement in the record.

[The prepared statement of Senator Thurmond follows:]

PREPARED STATEMENT BY SENATOR STROM THURMOND

Thank you Mr. Chairman: Mr. Chairman, I join you in welcoming our distinguished panel to this hearing on the status of the Strategic Environmental Research and Development Program. Although the program is still in its developmental staged it has the potential to significantly enhance our Nation's environmental programs and I hope it will be a success.

Mr. Chairman, it will take a concerted effort on the part of all government agencies to tackle the environmental issues facing this Nation. The Strategic Environmental Research and Development Program can greatly assist in this effort since it will marshal the expertise of our government agencies and laboratories for the cause for our environment.

Mr. Chairman, I am especially pleased to see representation on today's panel from such a large and diversified group of government agencies. It is indicative of the tremendous impact this program can have on our approach to the environmeltal problems facing us. Although progress to date is slower than I would have anticipated I share your hope that the Strategic Environmental Research and Development Program will be the catalyst for a cleaner and healthier world for all of us.

Mr. Chairman, although the Strategic Environmental Research and Development Program has great potential for the improvement of our environment, it also has great potential to be abused by parochial interests. I hope you and this committee will prevent it from becoming merely another vehicle upon which to channel funding to special interests groups and projects which are not in the best interest of this program.

Thank you Mr. Chairman.

Chairman NUNN. Thank you, Senator Thurmond. Without objection. Senator Gore.

Senator GORE. Mr. Chairman, I have no statement and I look forward to the testimony today.

Chairman NUNN. All right, thank you, sir. Dr. Skinner, do you want to lead off today?

STATEMENT OF HON. JOHN S. SKINNER, DEPUTY ASSISTANT ADMINISTRATOR, OFFICE OF RESEARCH AND DEVELOPMENT, ENVIRONMENTAL PROTECTION AGENCY ACCOMPANIED BY DR. ROSEMARIE C. RUSSO, DIRECTOR, ENVIRONMENTAL RESEARCH LABORATORY; AND MR. FRED LINDSEY, DIRECTOR, OFFICE OF ENVIRONMENTAL ENGINEERING, ENVIRONMENTAL PROTECTION AGENCY

Dr. SKINNER. Yes. Thank you, Mr. Chairman. I thank the other witnesses for allowing me to speak first so that I can catch my plane. I have two other people with me today from EPA who will be here for the entire hearing to answer questions: Dr. Rosemarie Russo, who is the Director of our Environmental Research Laboratory in Athens, Georgia; and Mr. Fred Lindsey, who is the Director of our Environmental Engineering Office, here in Washington.

Since my full testimony will be included in the record, I will just make some summary remarks. EPA is very interested in and supportive of this program. We think it provides a great new opportunity to turn to the talents and capabilities of DOD and DOE to deal with significant environmental research needs.

My office, the Office of Research and Development, is the focal point for this activity in EPA, and we have had a long-standing research program with both of these agencies. There are many projects under way, which have been under way for years in the area of environmental research as pertaining to Department of Defense and Department of Energy activities, and we see the Strategic Environmental Research and Development Program as something that can build upon these past activities to provide for better and higher level coordination of this research, and more strategic planning on future research.

We believe it will benefit all parties. We believe it will benefit the Department of Defense and the Department of Energy by developing new solutions to environmental problems at their facilities. We think it will benefit EPA in providing data and access to capabilities that we did not have previously.

There is widespread interest in EPA in this program. We have put together a working group that has identified literally hundreds of potential projects to be carried out under the program. Attached to my written testimony is a smattering of some of those projects, examples of the types of work that we think can be done.

We have grouped our projects in three areas that we think are very high priority that require immediate attention; (1) projects that deal with hazardous site remediation (one of these, an innovative technique for sites contaminated with munition wastes, was developed in Dr. Russo's laboratory, and if you are interested, she can describe that project); (2) projects that deal with pollution prevention and reducing wastes before they are generated; and (3) projects that deal with what we call integrated environmental management, where you look at environmental issues at a military base or a facility from an integrated approach, dealing with sewage, solid waste, indoor air, asbestos, and other types of programs in an integrated way. We think research into those three areas would have a very high potential payoff.

Other important areas, Mr. Chairman, some of which you mentioned in your preliminary remarks are: remote sensing, which could be used to sense ecological effects of global change and global warming. We think the capabilities of both of the agencies would be very substantial in that area. We are currently screening these projects, and we will come up with a prioritized list based upon several criteria: applicability to problems both in the public and the private sector and projects that would improve the linkages between the three agencies.

We have had a number of staff-level meetings and discussions with the staffs of both agencies and we are looking forward to the first formal meeting of the Council, which I understand is going to take place at the end of this month.

So in summary, we think SERDP is a very good idea. We are cooperating fully with the Department of Defense and Department of Energy in development of this program, and we are enthusiastic about our participation.

Thank you.

[The prepared statement of Dr. Skinner follows:]

PREPARED STATEMENT BY DR. JOHN H. SKINNER, DEPUTY ASSISTANT ADMINISTRATOR FOR RESEARCH AND DEVELOPMENT, U.S. ENVIRONMENTAL PROTECTION AGENCY

INTRODUCTION

I am John Skinner, Deputy Assistant Administrator for Research and Development at the U.S. Environmental Protection Agency. I am accompanied today by Mr. Alfred Lindsay, Director of the Office of Environmental Engineering and Technology Demonstration and Dr. Rosemarie Russo, Director of the Environmental Research Laboratory in Athens, Georgia.

It is a pleasure for me to appear before you today to discuss the Environmental Protection Agency's (EPA's) interest in, and support of, the Strategic Environmental Research and Development Program (SERDP); and the steps we are taking to implement our activities under the program.

As you know, EPA is a member of the Council created to oversee SERDP and we look forward to playing an active role in developing and implementing the program. We are working with the Departments of Defense and Energy in developing the program and look forward to a close working relationship with them in implementing SERDP.

Because of the research, development, and demonstration nature of SERDP, the lead responsibility within EPA has been assigned to the Office of Research and Development.

ON-GOING ACTIVITY

Before discussing EPA's specific interests related to the SERDP, I would like to describe, briefly, the research and development we are doing, or have done, with the

Departments of Defense and Energy; and which, I believe, provides a foundation of cooperative work on which SERDP can build.

EPA has been actively involved in cooperative research, development, and demonstration activities with the Department of Defense (DOD) for over 10 years and with the Department of Energy (DOE) for over 15 years.

Most of the initial involvement with DOE was related to developing secure and environmentally sound energy sources following the embargo of Mid East oil in the mid-1970s.

More recently our cooperative work with both DOE and DOD has been focused on the defense programs' hazardous and radioactive waste problems. Such cooperative activities have benefited both parties in that EPA gains additional data related to a problem it is addressing or a chance to test or develop a new method or technique, while the DOD or DOE facility receives assistance in solving a specific problem.

Consequently nearly all cooperative activities to date have involved specific problems and specific sites, and have generally involved one of EPA's laboratories working directly with a specific DOD or DOE facility, plant, or base. For example, EPA's Risk Reduction Engineering Laboratory in Cincinnati, Ohio has over 40 current or recently completed joint projects with DOD or DOE groups.

Cooperation also occurs in certain areas, such as toxicology, where the experts in DOD, DOE, and EPA laboratories have jointly developed guidelines and have served as peer reviewers for each others operations and programs.

In addition to these very specific cooperative efforts, it should also be noted that EPA leadership, nationally and internationally, in the science of environmental risk assessment has been recognized by the DOD which has established guidance for its own hazardous wastes sites that parallels EPA guidance for such assessments.

A list of examples of cooperative activities, which I would like to submit for the record, reveals the breadth of EPA's research and development experience and capability across the wide spectrum of environmental issues. With our laboratories and field installations and related grants and contracts we are experienced in understanding health and ecological effects of pollutants, how pollutants move and are transformed in the environment, and various methods or techniques for controlling and eliminating pollutants.

SERDP CONCEPT

We are excited by the potential the SERDP offers. In our view it offers major benefits for all the parties. Not only will it provide some opportunities for joint projects and activities, but equally important it will provide access to data and facilities. It also has the potential of providing a mechanism for identifying issues and problems of mutual concern and coordinating related research and development activities.

By providing a senior level scientific and technical forum, the SERDP should also enable the government to identify generic problems and issues and devise generic solutions to them. This will permit the limited resources available for major operating programs, such as restoration of contaminated sites, to be applied most effectively by the responsible organizations.

INITIAL IMPLEMENTATION OF SERDP

Because the issues to be addressed by the SERDP potentially are of interest to all parts of EPA, we have created an Agency wide Work Group to oversee EPA's involvement in SERDP. We initially solicited ideas and areas of interest from all the Agency offices; and based on these, we have identified three major priority areas in which work could be undertaken to address defense-related environmental issues. In addition, we have identified other research topics believed to be of interest to DOD and/or DOE as well as certain DOD/DOE facilities and data to which access would help advance the state of environmental knowledge.

One priority area clearly is hazardous wastes and restoration of contaminated sites. Among the research and development work that could be undertaken in this area are:

— the development and/or modest scale demonstration of innovative technologies or techniques for handling hazardous waste or materials of particular concern or uniqueness to the defense programs;

— the development of quicker, more reliable, and easier to use systems for conducting risk exposure assessments of defense program hazardous and mixed-waste sites, and for the design of the most appropriate and cost-effective remediation techniques; and

— the development and demonstration of innovative monitoring techniques (chemical and biological) to gather data before restoration begins, during the operations, and after it is completed.

A second priority area, and one in which considerable work is needed to prevent or avoid future environmental problems is pollution prevention. Among the work could be undertaken in this area are:

— the development and/or evaluation of innovative pollution prevention techniques and approaches for reducing or minimizing wastes, effluents, or emissions from DOD/DOE industrial processes and facilities; and

— the development or evaluation of innovative risk reduction or pollution control techniques at DOD/DOE industrial facilities.

To integrate current knowledge and needs, we believe we need to undertake a more comprehensive environmental management approach. In this third priority area we have identified such tasks as:

— the development and demonstration of innovative, integrated environmental management techniques for small to medium size communities (military base) to include indoor air; drinking water; hazardous and municipal solid wastes; sewage; hazardous materials in housing, such as asbestos and lead; and emissions from power plants and other industrial facilities;

— the development or improvement of techniques or methods to identify potential environmental hazards at DOD/DOE facilities and to reduce or manage such hazards; and

— the development and testing of models to predict emissions of, and exposures to, pollutants from DOD/DOE facilities and to design effective, multimedia environmental management strategies.

Certain other specific research and development topics have also been identified that EPA believes would be of interest to DOD/DOE. In the environmental health area, research is needed on chemical mixtures of common interest; on electromagnetic field effects; and on specific chemicals, such as solvents and chemical and biological agents, of interest to DOD/DOE.

In addition, basic monitoring and modeling related research is needed to develop more effective and less expensive environmental sensors, monitoring techniques, and remote sensing capabilities for use in the evaluation of ecological stress and a better understanding of the release, dispersion, and deposition and fate of toxic chemicals.

Access to existing DOD/DOE data and facilities would assist EPA in expanding the understanding of how ecosystems function, what changes are occurring in ecosystems and the rate of change, as well as assist the Federal effort in understanding global climate change and its impact. Examples of the type of joint activities that might be undertaken include:

— the use of DOD remote sensing imagery and capability to improve spatial and temporal allocation of emissions and to monitor the status, extent, and trends of ecological resources, including global trends in vegetative/land use changes;

— the establishment of centers located at existing military bases to test and/or demonstrate technologies;

— the development or integration of training systems including interactive, computer based expert systems;

— the evaluation of greenhouse gas emissions from DOD/DOE facilities and related mitigation techniques;

— the development of models and assessment techniques using DOD/DOE facilities to quantify global change effects and feedbacks; and

— the transfer of information among agencies and the public through the establishment of a clearinghouse.

From our preliminary discussions with DOD and DOE, I believe the priority areas we have identified match quite closely with theirs and we look forward to producing a single integrated program.

DEVELOPMENT OF EPA SERDP PLAN

To deal with the literally hundreds of specific ideas that have emerged as potential SERDP projects or activities, we are working with DOD and DOE to establish criteria to guide the preparation and selection of specific activities to be included in the SERDP program.

Among these criteria we believe there are two primary ones. First we believe, consistent with the priorities of each of the agencies, that work supported by SERDP have broad applicability in both the public and private sectors. Second, we believe SERDP activities should improve linkages for both the short and long term among our respective agencies and address problems that are national in scope. We also feel that any proposal should qualify as a research (basic or applied), development, or modest scale demonstration effort.

We will soon prepare a number of specific proposals based on the priority areas and criteria we are working with DOD and DOE to establish.

Though no decisions have been made on specific projects and activities, we are quite excited about a number of proposals we have received from our laboratories. One would involve the development and testing of an emerging, innovative technology for chemical remediation of munitions wastes. Another would involve the development of assessment methodology and tools for evaluating cleanup options for military sites. The analysis of and means to eliminate or mitigate emissions, such as CFC, that create environmental problems from DOD and DOE facilities is another possible area of cooperation.

COOPERATION WITH DOD/DOE

Though the Council has not yet met, as I mentioned earlier we have had staff level contacts and discussions with DOD and DOE and are working together to develop a integrated program plan based on a set of priority areas and criteria. It is clear from preliminary discussions that there are many more valid and good research and development ideas emerging from the involved organizations than there are resources to support.

As I mentioned at the beginning of my testimony, we believe that in addition to funding projects and activities, SERDP will provide a mechanism to coordinate related research and development and for exchange of information. We also plan to bring that issue to the Council for consideration.

Thank you. I will be happy to respond to any questions you may have.

ATTACHMENT A

EXAMPLES OF PAST AND CURRENT COOPERATIVE ACTIVITIES BETWEEN THE ENVIRONMENTAL PROTECTION AGENCY AND THE DEPARTMENTS OF DEFENSE AND ENERGY

There have been many cooperative activities between EPA and the defense establishment over the last decade. Examples of some of the current activities follow, included is the DOD/DOE partner and the EPA laboratory or program involved.

1. Fate, transport, and transformation of pollutants in the environment:

— Development of a generic methodology to evaluate the fate of sediment related pollutants, either left in place or disposed of under alternative disposal options such as a combined disposal facility.

Army, Waterways Experiment Station, Corps of Engineers
Environmental Research Laboratory, Athens, GA

— Evaluate the use of nitrate to enhance the bioremediation of aquifers contaminated by petroleum hydrocarbons.

Air Force (also Coast Guard)
RS Kerr Environmental Research Laboratory, Ada, OK

— Development of indicators, monitoring methods, and fate and risk assessment methodology to evaluate the ecological impact adjacent to Navy facilities on Narragansett Bay.

Navy
Environmental Research Laboratory, Narragansett, RI

— Development and validation of a fish and physiological based pharmacokinetics model for use in environmental risk assessment.

Air Force
Environmental Research Laboratory, Duluth, MN

— Environmental fate of colored smoke dyes in soils and sediments.

Army/Ft. Detrick
Environmental Research Laboratory, Athens, GA

2. Risk Assessment

— Collaborative effort to develop a physiologically-based pharmacokinetics model, using the medaka fish.

Air Force, Armstrong Aerospace Medical Research Lab, Wright-Patterson AFB, OH
Office of Health and Environmental Assessment, DC

— Collaborative effort focused on providing quick, reliable, inexpensive toxicity assessment and cross-species extrapolation data.

Army Medical Research & Development Command, Fort Detrick, Frederick, MD
Office of Health and Environmental Assessment, DC

— Collaborative effort to assess sperm and mutagen assays as biological markers of exposure to solvents.

Air Force, Hill Air Force Base, UT
Office of Health and Environmental Assessment, Cincinnati, OH

3. Health effects

— Interaction between environmental toxicants, gastrointestinal (GI) microflora, GI enzyme activity and chemical carcinogenesis.

Air Force, AFOSR/NL, Bolling Air Force Base, Washington, DC
Health Effects Research Laboratory, RTP, NC

— Toxicity of red and violet smoke dyes to packing plant workers.

Army, Medical Bioengineering Research and Development Command, Fort Detrick, MD
Health Effects Research Laboratory, RTP, NC

4. Monitoring, monitoring systems, and quality assurance

— ASTM sponsorship of accelerated ground water monitoring standards.

Navy, Port Hueme, CA
Environmental Monitoring Systems Laboratory, Las Vegas, NV

— Research on soil gas analysis and advanced field monitoring methods.

Air Force, Tyndall AFB, FL
Environmental Monitoring Systems Laboratory, Las Vegas, NV

— Assistance in installation assessment, reassessment, and post closures.

Army Toxic and Hazardous Materials Agency (USATHAMA)
Environmental Monitoring Systems Laboratory, Las Vegas, NV

— Topographic mapping support.

Army, St. Louis District Corps of Engineers
Environmental Monitoring Systems Laboratory, Las Vegas, NV

— Use of the EPIC facility at Vint Hill, VA.

Army, Baltimore District Corps of Engineers
Environmental Monitoring Systems Laboratory, Las Vegas, NV

— Development and adoption of a single set of quality assurance (QA) requirements for use in environmental monitoring at all installations across the country.

Army, Corps of Engineers and Toxic and Hazardous Waste Agency; Navy; Air Force; and DOE's Office of Environmental Restoration and Waste Management
Quality Assurance Management Staff, DC

5. Handling hazardous wastes

— Determination of combustion products from the open detonation and burning of munitions, including the characterization of organic and metal emissions.

Army, Rock Island Arsenal
Atmospheric Research and Exposure Assessment Laboratory, RTP, NC

— Developing a project to measure pollutants from on-site disposal of munitions in Kuwait.

Army and Navy
Atmospheric Research and Exposure Assessment Laboratory, RTP, NC

— Application of solar destruction techniques to treat contaminated soils.

Army, USATHAMA; and DOE, Solar Energy Research Institute
Risk Reduction Engineering Laboratory, Cincinnati, OH

— Application of flotation and separation techniques for removal of toxic materials and recovery of metals from soils.

DOE, Defense Waste Remediation Program
Risk Reduction Engineering Laboratory, Cincinnati, OH

— Application of resin-in-pulp and carbon-in-pulp technologies to treatment of contaminated land.

Risk Reduction Engineering Laboratory, Cincinnati, OH

— Evaluation of leak detection technology in large underground storage tanks.

Air Force, Griffiss AFB, Rome, NY
Risk Reduction Engineering Laboratory, Cincinnati, OH

— Demonstration of in-situ biorestoration as part of the Superfund Innovative Technology Evaluation program.

Air Force, Kelly AFB
Risk Reduction Engineering Laboratory, Cincinnati, OH

6. Pollution prevention

— Assessment of waste minimization opportunities

DOD, Philadelphia Navy Yard and Ft. Riley, KS
Risk Reduction Engineering Laboratory, Cincinnati, OH

— Demonstration of non-destruction testing.

Air Force, Scott AFB
Risk Reduction Engineering Laboratory, Cincinnati, OH

— Demonstration of solvent usage.

Air Force, Tyndall AFB
Risk Reduction Engineering Laboratory, Cincinnati, OH

Chairman NUNN. Thank you very much, Dr. Skinner. I assume you can be here—how much longer?

Dr. SKINNER. Until 3 o'clock.

Chairman NUNN. Until 3 o'clock. Okay.

Dr. Osterman, we will turn to you next.

STATEMENT OF DR. JOSEPH V. OSTERMAN, DIRECTOR, ENVIRONMENT AND LIFE SCIENCES, DEPARTMENT OF DEFENSE ACCOMPANIED BY COL. GRANT AUFDERHAAR, STAFF SPECIALIST, ATMOSPHERIC, TERRESTRIAL AND OCEAN SCIENCES, DEPARTMENT OF DEFENSE

Dr. OSTERMAN. Thank you, Mr. Chairman. It is a pleasure for me to appear before you today to discuss the Department of Defense role and participation in the Strategic Environmental Research and Development Program. I have brought with me Col. Grant Aufderhaar, to my immediate right rear, our Staff Specialist for Atmospheric, Terrestrial, and Ocean Sciences. Colonel Aufderhaar has a doctorate in meteorology.

The purposes of the SERDP are largely to address environmental matters of concern to the Department of Defense, Department of Energy, and the Environmental Protection Agency through support for basic and applied research. For this reason, management of the program within the Department of Defense has been placed in the Office of the Director, Defense Research and Engineering. Close liaison is maintained with the Deputy Assistant Secretary of Defense for Environment, whose office constitutes the user of developed technology within the Department of Defense.

Our current administrative activities are as follows: Public Law 101–510 charges the Secretary of Defense with responsibility to establish the SERDP and to institute the three administrative organizations mandated as integral components of the program. I would like now to describe for you the progress that has been made toward initiating the activities of the SERDP Council, the SERDP Scientific Advisory Board, and the SERDP Executive Director.

Membership of the SERDP Council, of course, is described in the National Defense Authorization Act for Fiscal Year 1991 and includes four representatives from the Department of Defense, three from the Department of Energy, and one from the Environmental Protection Agency, with the SERDP Executive Director participating as a non-voting member. The Chairmanship of the Council rotates annually between the Department of Defense and the Department of Energy, and in fiscal year 1991, the Department of Defense has identified the Director, Defense Research and Engineering, as the initial leader of the Council.

In order to facilitate interactions among the three Departments and agency, an informal working group has been established of subordinates to the Council members. These working group members meet periodically and also exchange information and issues concerning the SERDP on a daily basis by telephone. This informal working group has been the key to facilitating prompt and smooth interactions between three large and complex organizations. The working group has developed an agenda for the initial meeting of the SERDP Council, alluded to a moment ago, and is in the process of obtaining Department/Agency approval of the agenda. This first meeting of the Council is currently scheduled for May 30, 1991.

The SERDP Scientific Advisory Board is to be appointed by the Secretary of Defense and the Secretary of Energy in consultation with the Administrator of the Environmental Protection Agency. Public Law 101-510 mandates that the Science Advisor to the President shall be a permanent member to the Scientific Advisory Board, and that additional members shall be nominated by the National Academy of Sciences, the Council on Environmental Quality, and the National Association of Governors.

I am pleased to say that Dr. Bromley has accepted our invitation to participate on the Scientific Advisory Board.

The formation of this group is also off to a good start, the National Academy of Sciences has forwarded 26 nominees for the Scientific Advisory Board, 4 have been received from the Council on Environmental Quality, and 1 from the National Association of Governors. In addition, both the Department of Energy and the Environmental Protection Agency have voluntarily submitted the names of additional nominees.

We are currently receiving biographical data from all these individuals, and the SERDP Council will soon make recommendations to the Secretaries and the Administrator concerning appointment of the Scientific Advisory Board. Our chief problem will be in selecting 12 members as required by law from the numerous outstanding candidates.

A charter has been developed for the Scientific Advisory Board, and is currently under review by each Department and Agency. In addition, the Department of Defense is currently accomplishing the other necessary administrative activities required by the Federal Advisory Committee Act. We anticipate the Scientific Advisory Board will have its initial meeting subsequent to the development of an integrated technical investment strategy by the Departments and Agency participating in the SERDP.

The Executive Director of the SERDP Council is to be appointed by the Secretary of Defense after consultation with the Secretary of Energy. The Secretary of Defense has selected a nominee for that position, and the Secretary of Energy has concurred in that nomination. I am the prospective Executive Director, and expect to be formally appointed to that position by the Secretary of Defense within the next 15 days.

The status of our current programmatic activities are as follows. Another important activity undertaken by the Department of Defense has been the creation of an investment strategy for effective utilization of SERDP funds. Our investment strategy is focused on support of environmental research and development in the following important areas: environmental protection and compliance; pollution prevention; environmental restoration; environmental change and data analysis; hazard assessment; clean energy; and natural resource management.

The Department of Energy and the Environmental Protection Agency are in the process of developing detailed technical plans at this time. When their efforts are more mature, the three plans will be melded into a single integrated plan to insure that there is no redundancy or duplication of effort. This coordinated plan will be submitted to the SERDP Council for approval, and will be the basis for SERDP Council recommendations to the Secretary of Defense concerning the program.

The close interaction between Departments and Agency that has necessarily arisen in solving SERDP issues has also lead to the concept that the SERDP may serve as a mechanism for integration and review of all environmental research and development efforts conducted within the three organizations. This review process would include not only SERDP efforts, but those funded with other sources of support. Such a concept would promote coordination and collaboration to a greater extent than is now obtained, would preclude duplication of effort, and would create a national technology-based capability that all Federal user communities could draw upon for execution of the programs.

We anticipate bringing this concept before the SERDP Council during its initial meeting on May 30, 1991.

A word about challenges that have been overcome. In my view, there have been two principal challenges that have impeded development of the program, and you alluded to this in your opening comments, Mr. Chairman. One occurred clearly within the Department of Defense, and the other, I believe, is a challenge common to each participant.

Early in fiscal year 1991, we were addressing the SERDP issues presented in the National Defense Authorization Act, and we were in the formative stages of preparing a SERDP investment strategy. As you indicated, SERDP was a congressional initiative, and as a result, no planning had been accomplished within the Department of Defense for the program, prior to the passage of the fiscal year 1991 legislation. Our initial lack of a comprehensive technical investment strategy for the SERDP required a lengthy evaluation by the Department, which was completed this January. This period of evaluation, in turn, delayed our interactions with the other Department and Agency.

However, subsequent to January 1991, the Department of Defense has moved swiftly to refine our own investment strategy, and to initiate management and technical interactions with the Department of Energy and the Environmental Protection Agency. I believe these interactions are quite sound, and mutual trust and confidence has been developed between representatives of each organization.

The second challenge facing the SERDP has been partially overcome, but will likely continue to be an issue. This challenge relates to the size and complexity of the organizations which are attempting to interact effectively within the SERDP and the time required to achieve effective tri-organizational coordination. The Council working group, alluded to earlier, has substantially reduced the time required to achieve coordination of issues within the Departments and Agency, but appropriate staffing within each organization to achieve inputs from all interested parties still requires several weeks, rather than several days.

The recommendation I would like to leave with you in relation to this issue is that congressional changes in the administrative and programmatic functioning of the SERDP must be held to an absolute minimum.

I believe that we have made excellent progress in implementing the provisions of the National Defense Authorization Act for Fiscal Year 1991, but as you have indicated, Mr. Chairman, that progress has taken time. The SERDP now appears to be on a proper course with the mandated administrative units now becoming functional. I suggest that we need to leave the apparatus intact, and to assess the effectiveness and accomplishments of the scientific program at the end of fiscal year 1992.

And then I would like to make just a few comments about the way ahead as I see it. The Department of Defense anticipates an integrated tri-organizational technical investment strategy will be completed and presented to the SERDP Council during the fourth quarter of fiscal year 1991. The Department of Defense investment strategy is complete and in final form. The Department of Energy and the Environmental Protection Agency, I believe, have formulated outline plans of their efforts and anticipate initiation of detailed planning in early June 1991.

After completion, this integrated investment strategy will be evaluated and analyzed by the Council, which will forward recommendations to the Secretary of Defense concerning the program. The selection and appointment of the Scientific Advisory Board will be completed in the same time frame, and the Board will be consulted concerning the technical adequacy and merit of individual projects. We believe that a final investment strategy, reviewed as necessary by the Scientific Advisory Board, and approved by the Council, will be available for implementation at the beginning of fiscal year 1992.

Initiation of the program at the beginning of the fiscal year will bring the effort into programmatic synchrony with other ongoing environmental research and development projects, and will also simplify financial oversight and management of the program.

The SERDP promises to be an intellectually exciting, technologically productive program that could be the foundation of a national technology-base effort in environmental research and development. The program should effectively meld together the efforts of government laboratories, university researchers, and industrial organizations to enhance our capabilities across a wide spectrum of environmental concerns and needs.

Your letter, Mr. Chairman, also requested any comments about changes in legislation, and I have only one. In keeping with my previous comments, I believe that changes in the SERDP should be held to a minimum. However, our experience today suggests that a change in the Department of Defense representation on the SERDP Council would be appropriate. The Vice Chairman of the Joint Chiefs of Staff should be deleted from the Council and should be replaced with one representative from the Army and one from the Navy. This change is consistent with equal representation for all services on the Council, and allows the Vice Chairman of the Joint Chiefs of Staff to focus on the warfighting mission of his organization.

Thank you very much, Mr. Chairman.

[The prepared statement of Dr. Osterman follows:]

PREPARED STATEMENT BY DR. JOSEPH V. OSTERMAN, DIRECTOR ENVIRONMENTAL AND LIFE SCIENCES

INTRODUCTION

I am Dr. Joseph V. Osterman, Director of Environmental and Life Sciences for the Director, Defense Research and Engineering. It is a pleasure for me to appear before you today to discuss the Department of Defense's role and participation in the Strategic Environmental Research and Development Program (SERDP). I have brought with me Colonel Grant Aufderhaar, our staff specialist for atmospheric, terrestrial and ocean sciences. Colonel Aufderhaar has a doctorate in meteorology.

The purposes of the SERDP are largely to address environmental matters of concern to the Department of Defense, Department of Energy and the Environmental Protection Agency through support for basic and applied research. For this reason, management of the program within the Department of Defense has been placed in the office of the Director, Defense Research and Engineering. Close liaison is maintained with the Deputy Assistant Secretary of Defense (Environment), whose office constitutes the user of developed technology within the Department of Defense.

CURRENT ADMINISTRATIVE ACTIVITIES

Public Law 101-510 charges the Secretary of Defense with responsibility to establish the SERDP, and to institute the three administrative organizations mandated as integral components of the program. I would like now to describe for you the progress that has been made toward initiating the activities of the SERDP Council, SERDP Scientific Advisory Board, and SERDP Executive Director.

Membership of the SERDP Council is described by the National Defense Authorization Act for fiscal year 1991, and includes four representatives from the Department of Defense, three from the Department of Energy, and one from the Environmental Protection Agency, with the SERDP Executive Director participating as a non-voting member. The Chairmanship of the Council rotates annually between the Department of Defense and Department of Energy. In fiscal year 1991, the Department of Defense has identified the Director, Defense Research and Engineering as the initial leader of the Council. In order to facilitate interactions among the three Departments/Agency, an informal working group has been established of subordinates to the Council members. These working group members meet periodically, and exchange information and issues concerning the SERDP on a daily basis by telephone. This informal working group has been the key to facilitating prompt and smooth interactions between three large and complex organizations. The working group has developed an agenda for the initial meeting of the SERDP Council, and is in the process of obtaining Department/Agency approval of the agenda. This first meeting of the Council is currently scheduled for May 30, 1991.

The SERDP Scientific Advisory Board (SAB) is to be appointed by the Secretary of Defense and the Secretary of Energy, in consultation with the Administrator of the Environmental Protection Agency. Public Law 101-510 mandates that the Science Advisor to the President shall be a permanent member of the SAB, and that additional SAB members shall be nominated by the National Academy of Sciences, Council on Environmental Quality, and the National Association of Governors. The formation of this group is also off to a good start. The National Academy of Sciences has forwarded 26 nominees for the SAB, 4 have been received from the Council on Environmental Quality, and both the Department of Energy and Environmental Protection Agency have voluntarily submitted the names of additional nominees. We are currently receiving biographical data from all these individuals, and the SERDP Council will soon make recommendations to the Secretaries and the Administrator concerning appointment of the SAB. Our chief problem will be in selecting 12 members, as required by law, from the numerous outstanding candidates. A charter has been developed for the SAB and is currently under review by each Department/Agency. In addition, the Department of Defense is currently accomplishing other necessary administrative activities required by the Federal Advisory Committee Act. We anticipate that the SAB will have its initial meeting subsequent to the development of an integrated technical investment strategy by the Departments/Agency participating in the SERDP.

The Executive Director of the SERDP Council is to be appointed by the Secretary of Defense after consultation with the Secretary of Energy. The Secretary of Defense has selected a nominee for the position, and the Secretary of Energy has concurred in that nomination. I am the prospective Executive Director, and expect to be formally appointed to that position within the next 15 days.

CURRENT PROGRAMMATIC ACTIVITIES

Another important activity undertaken by the Department of Defense has been the creation of an investment strategy for effective utilization of SERDP funds. Our investment strategy has focused on support of environmental research and development in the following important areas: environmental protection and compliance, pollution prevention, environmental restoration, environmental change and data analysis, hazard assessment, clean energy, and natural resource management. The Department of Energy and the Environmental Protection Agency are in the process of developing detailed technical plans at this time. When their efforts are more mature, the three plans will be melded into a single, integrated plan to ensure that there is no redundancy or duplication of effort. This coordinated plan will be submitted to the SERDP Council for approval, and will be the basis for SERDP Council recommendations to the Secretary of Defense concerning the program.

The close interaction between Departments/Agency that has necessarily arisen in solving SERDP issues has also led to the concept that the SERDP may serve as a mechanism for integration and review of all environmental research and development efforts conducted within the three organizations. This review process would include not only SERDP efforts, but those funded with other sources of support. Such a concept would promote coordination and collaboration to a greater extent than is now obtained, would preclude duplication of effort, and would create a national technology base capability that all Federal user communities could draw upon for execution of programs. We anticipate bringing this concept before the SERDP Council during its initial meeting on May 30, 1991.

CHALLENGES OVERCOME

There have been two principal challenges that have impeded development of the program; one occurred within the Department of Defense, and the other is a challenge common to each participant.

Early in fiscal year 1991, we were addressing the SERDP issues presented in the National Defense Authorization Act, and were in the formative stages of preparing a SERDP investment strategy. Please keep in mind that the SERDP was a congressional initiative, and as a result, no planning had been accomplished within the Department of Defense for the program prior to passage of fiscal year 1991 legislation. Our initial lack of a comprehensive technical investment strategy for the SERDP required a lengthy evaluation by the Department which was completed this January. This period of evaluation, in turn, delayed our interactions with the other Department/Agency.

Subsequent to January 1991 the Department of Defense has moved swiftly to refine our own investment strategy and to initiate management and technical interactions with the Department of Energy and the Environmental Protection Agency. These interactions are quite sound, and mutual trust and confidence has been developed between representatives of each organization.

The second challenge facing the SERDP has been partially overcome, but will likely continue to be an issue. This challenge relates to the size and complexity of the organizations which are attempting to interact effectively within the SERDP, and the time required to achieve effective tri-organizational coordination. The Council working group, alluded to earlier, has substantially reduced the time required to achieve coordination on issues within the Departments/Agency, but appropriate staffing within each organization to achieve inputs from all interested parties still requires several weeks rather than several days. The recommendation I would like to leave with you in relation to this issue is that congressional changes in the administrative and programmatic functioning of the SERDP must be held to an absolute minimum. I believe that we have made excellent progress in implementing the provisions of the National Defense Authorization Act for fiscal year 1991, but that progress has taken time. The SERDP now appears to be on the proper course, with the mandated administrative units now becoming functional. I suggest that we need to leave the apparatus intact, and to assess the effectiveness and accomplishments of the scientific program at the end of fiscal year 1992.

THE WAY AHEAD

The Department of Defense anticipates that an integrated, tri-organizational technical investment strategy will be completed and presented to the SERDP Council during the 4th quarter of fiscal year 1991. The Department of Defense investment strategy is complete, and in final form. The Department of Energy and the Environmental Protection Agency have formulated outline plans of their efforts, and anticipate initiation of detailed planning in early June 1991. After completion, this integrated investment strategy will be evaluated and analyzed by the Council, which will forward recommendations to the Secretary of Defense concerning the program. The selection and appointment of the Scientific Advisory Board will be completed in the same timeframe, and the Board will be consulted concerning the technical adequacy and merit of individual projects. We believe that a final investment strategy, reviewed by the SAB and approved by the Council, will be available for implementation at the beginning of fiscal year 1992.

Initiation of the program at the beginning of the fiscal year will bring the effort into programmatic synchrony with other on-going environmental research and development projects, and will also simplify financial oversight and management of the program.

The SERDP promises to be an intellectually exciting, and technologically productive program that could be the foundation of a national technology base effort in environmental research and development. The program should effectively meld together the efforts of government laboratories, university researchers, and industrial organizations to enhance our capabilities across a wide spectrum of environmental concerns and needs.

CHANGES IN LEGISLATION

In keeping with my previous comments, I believe that changes in the SERDP should be held to a minimum. However, our experience to date suggests that a change in the Department of Defense representation on the SERDP Council would be appropriate. The Vice Chairman of the Joint Chiefs of Staff should be deleted from the Council, and should be replaced with one representative from the Army and one from the Navy. This change is consistent with equal representation for all services on the Council, and allows the Vice Chairman of the Joint Chiefs of Staff to focus on the warfighting mission of his organization.

Thank you.

Chairman NUNN. Thank you, Dr. Osterman.

I am going to turn to you, Mr. Tuck, and I know that Dr. Skinner is probably going to have to leave before we get back from our break to vote at 2:30 p.m., so I will open it up for any questions, particularly to Dr. Skinner, right after Secretary Tuck gives his opening statement.

STATEMENT OF HON. JOHN C. TUCK, UNDER SECRETARY OF ENERGY, DEPARTMENT OF ENERGY

Mr. TUCK. Thank you, Mr. Chairman. I very much appreciate the opportunity to appear today, to discuss the Department of Energy's participation in the Strategic Environmental Research and Development Program.

The Department of Energy wholeheartedly supports this initiative, and is working very closely with the agencies represented here today to make the goals of the program a reality. The Department's activity within the initiative will be guided by the Strategic Environmental Research and Development Program Council, which is established under the Act. The Department of Energy will work within the nine-member Council to carry out the goals of the initiative.

Although the Department of Defense is the lead agency for this initiative, the Department of Energy must concur in most of its actions. The Department has concurred in the nominations of the Executive Secretary of the Council and is working closely with DOD and EPA to establish the Scientific Advisory Board as called for by the statute.

The three agencies, along with the National Academy of Sciences, are in the process of developing a charter for the Advisory Board, and identifying its members. Appointments to the Board were to be made no later than 60 days after enactment of the act, however, no appointments will be made until after the Board's charter is complete.

According to the act, the Secretary of Energy may submit to Congress any recommendations for changes in the structure, or personnel, of the Council that they consider necessary to carry out the Strategic Environmental Research Initiative.

I would like to reiterate a proposition that was discussed last June, before enactment of the statute, when the Chairman announced his intent to create the Strategic Environmental Research Initiative. The Council is currently required to develop a single 5-year plan for the three agencies. As you know, last year Admiral Watkins recommended to the Chairman that each agency directly receive a portion of the funds. The Department of Energy further recommended that each agency develop a separate, but complimentary 5-year plan with the SERDP Council serving as the integrating organization. Each agency's plan would identify those areas where cooperative research would have the greatest impact while allowing other non-complimentary research activities to continue.

This change would greatly ease the burden placed on the SERDP Council members but allow them to have final sign off to make sure duplicative activities were not funded. It would also allow the SERDP Council to serve its important coordination role, rather than making the Council force fit disparate research activities into a single plan.

The act also includes research on such issues as global climate change and ozone depletion. And these activities will be carried out through the Department of Energy's Office of Energy Research. The Department of Energy is working closely with the Department of Defense and EPA to implement the provisions of the SERDP. And I met with Dr. Osterman in February of this year to discuss the Department's role in SERDP and our commitment to the program and the development of a single, integrated investment plan. The Department has had similar meetings with EPA personnel, and these meetings have been very productive and have laid the ground work for future interactions among the three agencies.

DOE, DOD, and EPA are presently developing a plan to govern our joint activities for future interactions.

A significant portion of the Department's environmental programs are focused toward the clean up and modernization of its facilities. The Department's clean-up problems stem from its national defense activities. The DOE and its predecessor organizations produced the nuclear weapons which have served as the cornerstone of this country's defense for over 40 years. However, these activities have left a legacy of environmental contamination that we are all completely familiar with. Early waste management practices, although considered adequate at the time, have proven inadequate for long-term environmental protection. And Secretary Watkins has created an Office of Environmental Restoration and Waste Management to address these needs.

The Department of Energy Office of Environmental Restoration and Waste Management has established a number of priorities under the SERDP. These include waste minimization and avoidance, pollution prevention and abatement, site characterization, and waste retrieval and processing.

The Department of Energy Office of Defense Programs will also benefit greatly from the SERDP activities. One priority under SERDP will be the development of technological advances in manufacturing sciences. Transfer of these technologies to private industry will aid the U.S. productivity in international competitiveness. Development of advanced manufacturing processes will reduce the volume and toxicity of waste generated in DOE materials fabrication facilities.

Chairman NUNN. Secretary Tuck, rather than rush you through this, why do we not, if we can, just stop right there for a moment and let me invite the members to ask Dr. Skinner questions since we have had a vote come up, because he has got to leave before we get back. When we come back from the vote, we will start right back with you. I think we will have a little bit better procedure that way.

And I am going to waive my questioning of Dr. Skinner, and call on Senator Gore in my place. And I will then rotate to Senator Thurmond.

Senator GORE. Thank you very much, Mr. Chairman.

Mr. Skinner, why the delay in creating an EPA SERDP plan?

Mr. SKINNER. We are in the process of looking at all of our research and selecting those aspects of it that we feel would be the most relevant to the Department of Defense and the Department of Energy activities. We currently conduct a $450 million-a-year research program, and had to go through all of our laboratories in order to identify those activities.

We have completed that stage and we are now at that point where we can put together a plan based upon that analysis.

Senator GORE. Any special thoughts about transfer of ideas? And let me clarify that. Transfer of ideas from the program to the civilian sector.

Dr. SKINNER. Yes. One example, we feel that a number of studies that the Defense Department has done with respect to remote sensing and satellite imagery could be very, very useful for us to assess the impacts of global climate change on ecological systems. Those technologies are very sensitive, can make very careful measurements, and the transfer of that technology to the commercial field could be very, very helpful to us. That is one example of an area.

Senator GORE. I will pursue it later, Mr. Chairman, in light of the time constraints I will cut off my questions there.

Chairman NUNN. Dr. Skinner, you will have some people that are going to remain here, correct?

Dr. SKINNER. Yes, Mr. Chairman.

Chairman NUNN. Senator Thurmond, any questions for Dr. Skinner? I will confine the questions to him now because he has to leave. And then we will come back and give all the witnesses a chance to answer questions.

Senator THURMOND. Thank you, Mr. Chairman, I just have two or three.

Dr. Skinner, your statement indicates that the EPA has ongoing cooperative research, development and demonstration programs with both the Department of Defense and the Department of Energy. What changes do you anticipate the Strategic Environmental Research and Development Board would have on these existing programs?

Dr. SKINNER. The main change that I think that the program will have is it will allow EPA to conduct research on issues that are of special interest to the Department of Defense and the Department of Energy. Our research program, currently, is oriented toward our regulatory responsibilities at EPA. This will give us an opportunity to direct out more to its problems, the problems that are seen at military facilities and Department of Energy facilities.

Senator THURMOND. I notice your comment on page 3 of your prepared statement. The particular sentence states in part, and I quote, "but equally important, it will provide access to data and facilities." Now I have always been under the impression that your agency had access to all government facilities and data. Would you explain what restrictions you are currently facing?

Dr. SKINNER. Yes, there may be certain information which is currently classified, which we do not have access to. And if, as a result of this program, that information could be looked at and declassified for our purposes, I think that would be very helpful. An example I just gave to Senator Gore concerned satellite imagery data, which would be helpful for ecological monitoring.

Senator THURMOND. That is all I have for Dr. Skinner.

Chairman NUNN. Thank you, Senator Thurmond.

Senator Wirth, any questions for Dr. Skinner?

Senator WIRTH. Not at this time.

Senator GORE. I have one more, Mr. Chairman. Incidentally, I would cite as another example that we have used here in the committee, the excellent initiative by the Navy in making information available to ice scientists about the ice thickness in the Arctic Ocean.

One further question. It appears from the testimony that we are receiving today that the three largest labs are possibly in a position to dominate the research—a major portion of the research program. In your view, should the base be broader, and include other government labs and universities? Do you have a feeling about that?

Dr. **Skinner**. I think the program needs to be coordinated with universities and coordinated with other laboratories. We have seen this as quite an effort just putting together the programs in the three agencies. And I think that is a good place to start. I think we need to reach out and make sure that we are not duplicating things in universities and other laboratories.

Senator **Gore**. Thank you, Mr. Chairman.

Chairman **Nunn**. Dr. Skinner, the EPA has been doing research on environmental restoration of ordnance contaminated soil. Could you briefly explain EPA's program in that respect?

Dr. **Skinner**. Yes. Could I ask Dr. Russo, who is running that program in our Athens laboratory to answer that question?

Chairman **Nunn**. Yes. I have had the chance to visit with Dr. Russo, and would like to have it for the record here.

Dr. **Russo**. Thank you. The Athens Environmental Research Laboratory has conducted fundamental research on the chemical and biological transformation processes that occur with contaminants in the environment. And we have used this research knowledge and recent advances in it to develop chemical remediation processes that we believe can be applied to TNT and related waste, which is very important in that there are over 100 sites nationally that are contaminated with TNT munitions waste.

We are looking forward to, and are very excited about, the opportunity to collaborate with DOD and DOE to continue the fundamental research and development of this new and innovative chemical remediation technology.

Chairman **Nunn**. Tell us what chemical remediation is in language that someone in the local rotary club would understand. What does that mean?

Dr. **Russo**. Contaminant chemicals will transform in the environment by various means: for example biological transformations where microbes change them; and by various chemical reactions that occur such as photolysis where just sunlight changes the chemical structure of the molecule. If you understand these processes and study them under various conditions, you can make the process go in the way that you want it to go, thus being the least environmentally stressful.

Chairman **Nunn**. Okay. Let us pause right there and we will come back to you when we get back in approximately 15 minutes. We have got only about 4 minutes to get to the vote, and this counts as 4 votes. So we will be back here at 2:55 p.m. Thank you.

[Recess.]

Chairman **Nunn**. Dr. Russo, I think you were rushing through your answer to my question, and I will take up right there with you, and then we will go back to Secretary Tuck.

Dr. **Russo**. Okay. Basically, once you understand the kinds of transformations that can happen to chemical pollutants in the environment, you can then use this knowledge to do the same chemical operations on a pollutant to reduce them to innocuous chemicals such as carbon dioxide, water, and nitrates. An example is, TNT that has nitro groups that are difficult to deal with, making it a hazard to the environment. We understand the chemistry of these molecules and can invoke processes that will change those groups to others that are less contaminating.

The virtues of this process, which we call chemical remediation, which simply means cleaning up a hazardous chemical by using a chemical process, is that it can be done much more cheaply and in situ; it is very versatile and can be used for many kinds of compounds.

Chairman NUNN. You mean turning a chemical that is dangerous into something that is not dangerous, right?

Dr. RUSSO. Precisely. Yes, sir. And used in conjunction with such things as bioremediation, which are biological breakdowns of chemicals, we then have a very powerful tool.

The reason we are excited about working with DOD and DOE on this, is that there are over 100 munitions sites in this country that need to be cleaned up. There are 116 Federal facilities on the Superfund list, and we understand there are going to be over 2,000 facilities that will be regulated under RCRA. So clearly, this innovative technology has great promise, and it can be very nicely studied under the Strategic Environmental R&D program.

Chairman NUNN. Well, thank you very much for that testimony and explanation. We are glad that is going on.

Secretary Tuck, we interrupted you, and we would like to give you time to finish your statement.

Mr. TUCK. Thank you, Mr. Chairman. I was simply summarizing what benefit certain subsets of the Department of Energy might receive from the important SERDP program. And I was summarizing specifically that the Department of Energy Office of Environmental Restoration and Waste Management has established a number of priorities under the SERDP which include waste minimization, and avoidance, pollution prevention and abatement, site characterization, and waste retrieval processing.

The Office of Defense Programs of the Department of Energy would also benefit from SERDP activities. One priority under SERDP would be the development of technological advances in manufacturing sciences and transfer of these technologies to private industry which will aid U.S. productivity and international competitiveness.

Also, development of advanced manufacturing processes will reduce the volume and toxicity of waste generated in the Department of Energy Materials Fabrication Facilities. Spin-off technologies would aid not only DOD and DOE programs, but also U.S. industry. And in addition, development of advanced engineering processes and technologies will reduce the overall size and operating costs of the future weapons complex. This will allow the Department to design and construct a more efficient complex, which we are terming Complex 21.

The Department of Energy Office of Energy Research is also exploring additional research activities within its global climate change program for possible inclusion in SERDP. And the Department has been involved with DOD research and development efforts in the areas of advanced computers and sensors. These technologies offer the opportunity to start gathering data about climate change and global warming, applying these technologies and environmental data gathering requirements could contribute to ongoing departmental efforts in support of U.S. global climate change research.

And finally, SERDP will provide government and private organizations with enhanced data collection and analytical capabilities for use in the conduct of environmental research.

In conclusion, Mr. Chairman, the Department of Energy supports Congress' efforts to harness DOD and DOE and EPA research and technology capabilities to enhance our ability to meet environmental obligations. The Secretary and I are excited at the potential of SERDP to enhance the myriad of environmental programs found within the Department of Energy, and we are working very closely with DOD and EPA to develop a single, integrated SERDP plan to make the goals of SERDP a reality.

I would be pleased to answer any questions you may have whenever you choose to ask them.

[The prepared statement of Mr. Tuck follows:]

PREPARED STATEMENT BY HON. JOHN C. TUCK, UNDER SECRETARY, U.S. DEPARTMENT OF ENERGY

Mr. Chairman, I appreciate the opportunity to appear today to discuss the Department of Energy's participation in the Strategic Environmental Research and Development Program (SERDP).

INTRODUCTION

As you know, the fiscal year 1991 Defense Authorization Act directs the Secretary of Defense to create the Strategic Environmental Research and Development Program, to address environmental matters of concern to the Department of Defense (DOD) and Department of Energy (DOE). Activities carried out under SERDP will closely coordinated with the Environmental Protection Agency (EPA). The program is intended to support development of technologies to address environmental restoration, waste minimization, hazardous waste substitution, and other environmental issues of mutual concern. The act also calls on DOD and DOE to share appropriate research, technologies, and information with other Federal agencies and the private sector.

The Department's activities within SERDP will be guided by the Strategic Research and Development Program Council (Council) which is established under the act. The Council has the authority to act for the Secretary of Defense and the Secretary of Energy in prescribing policies and procedures. The Department of Energy is working within the nine-member Council to carry out the above mentioned goals. The act calls for a number of specific activities that the Council is to undertake and lays out milestones for those activities. Although DOD is lead agency for this program, DOE must concur in most actions. Secretary Cheney, with Secretary Watkins' approval, appointed Dr. Joseph V. Osterman to be Executive Director of the Council. They are also working in consultation with the EPA Administrator to establish a Scientific Advisory Board (SAB) consisting of not less than 6 and not more than 13 members. They are in the process of developing a charter for the Advisory Board and identifying members. Appointments to the SAB were to be made no later that 60 days after enactment of the act, however, no appointments will be made until the Board's Charter is completed.

There are additional activities which can take place under the act, but are not required. For example, the Secretary of Defense, Secretary of Energy, and EPA Administrator can submit to Congress any recommendations for changes in the structure or personnel of the Council that they consider necessary to carry out the SERDP. I would like to reiterate a proposition discussed last June, when the Chairman announced his intent to create SERDP. The SERDP Council is currently required to develop a single 5-year plan for the three agencies. As you know, last year Admiral Watkins recommended to the Chairman that each agency directly receive a portion of the funds. The Department of Energy further recommended that each agency develop a separated but complimentary, 5-year plan, with the SERDP Council serving as the integrating organization. Each agency's plan would identify those areas where cooperative research would have the greatest impact, while allowing other, non-complementary, research activities to continue. This change would greatly ease the burden placed on SERDP Council members, but allow them final sign-off to make sure duplicative activities were not funded. It would also allow the SERDP

Council to serve its important coordination role, rather than making the Council force-fit disparate research activities into a single plan.

In addition, the Secretary of Defense, Secretary of Energy, and the Environmental Protection Agency Administrator may each submit to the Council a proposal for conducting environmental research. The Secretary of each Department shall ensure that its research proposals consider: (1) the need for increased research in basic science at defense-related facilities; and (2) ways to identify and conduct research and development on technologies for environmental restoration, waste minimization, or hazardous material substitution in defense-related production activities.

The act also includes research on such issues as global climate change and ozone depletion.

ONGOING ACTIVITIES

The Department of Energy is working closely with DOE and EPA to implement the provisions of the SERDP. I met with Dr. Osterman in February of this year to discuss the Department's role in SERDP and our commitment to the program and the development of a single, integrated investment plan. The Department has had similar meetings with EPA personnel. These meetings have been very productive and have laid the groundwork for future interactions among the three agencies. DOE, DOD, and EPA are presently developing a plan to govern our joint activities for future interactions.

The first meeting of the SERDP Council will be held on May 30, 1991. The purpose of the meeting is to: (1) develop long-term goals and near-term objectives for SERDP; (2) establish program priorities for a single integrated 5-year plan for DOD, DOE, and EPA activities; and (3) provide guidance to the three agencies to expedite development, approval, and funding of the 5-year plan. Our target date for completion of this process is October 1, 1991.

It is important to point out that Congress created SERDP only a few short months ago. And although DOE, DOD, and EPA are moving ahead rapidly toward implementation of the program, new initiatives of this magnitude and complexity require time to take root and grow. As a result, the newly formed Council may not achieve all the milestones called for in the Defense Authorization Act, but is moving ahead as vigorously as possible toward full implementation.

DOE IMPLEMENTATION PLANS

DOE has detailed a full-time employee to DOD to assist Dr. Osterman with organizing and implementing SERDP activities. This detail is for a minimum of 1 year. In addition, DOE has nominated several individuals to serve on the Science Advisory Board. The Department has also assigned a SERDP coordinator to coordinate the planning activities of the SERDP Council members. The Department's Council members are the Assistant Secretary for Defense Programs, the Director of Energy Research, and the Director of Environmental Restoration and Waste Management.

DOE proposals for inclusion in the SERDP initiative are grouped in six categories: (1) waste minimization and avoidance (source reduction), (2) technology transfer and integration, (3) recycle or reuse of materials, (4) environmental data gathering and analytical capabilities, (5) site characterization, and (6) waste retrieval, processing, and disposal.

A significant portion of the Department's environmental programs are focused toward the cleanup and modernization of its facilities. The Department's clean-up problems stem from its national defense activities. DOE, and its predecessor organizations, produced the nuclear weapons which have served as the cornerstone of this country's defense for over 40 years. However, these activities have left a legacy of environmental contamination. Early waste management practices—although considered state-of-the-art in their day—have proven inadequate for long-term environmental protection. Secretary Watkins created the Office of Environmental Restoration and Waste Management to address these needs.

The DOE Office of Environmental Restoration and Waste Management has established a number of priorities under SERDP. These include: (1) waste minimization and avoidance; (2) pollution prevention and abatement; (3) site characterization; and (4) waste retrieval and processing.

The DOE Office of Defense Programs will also benefit from SERDP activities. One priority under SERDP will be the development of technological advances in manufacturing sciences. Transfer of these technologies to private industry will aid U.S. productivity and international competitiveness. Development of advanced manufacturing processes will reduce the volume and toxicity of wastes generated in DOE materials fabrication facilities. Spin-off technologies would aid not only DOD and

DOE programs, but also U.S. industry. In addition, development of advanced engineering processes and technologies will reduce the overall size and operating cost of the future weapons complex. This will allow DOE to design and construct a more efficient complex.

The DOE Office of Energy Research is exploring additional research activities within its global climate change program for possible inclusion in SERDP. The Department has been involved with DOD research and development efforts in the areas of advanced computers and sensors. These technologies offer the opportunity to start gathering data about climate change and global warming. Applying these technologies and environmental data gathering requirements could contribute to ongoing departmental efforts in support of U.S. global climate change research. SERDP will provide government and private organizations with enhanced data collection and analytical capabilities for use in the conduct of environmental research.

CONCLUSION

The Department of Energy supports Congress' efforts to harness DOD and DOE research and technology capabilities to enhance our ability to meet environmental obligations. The Secretary and I are excited at the potential of SERDP to enhance the myriad of environmental programs found within DOE. We are working very closely with DOD and EPA to develop a single integrated SERDP plan to make the goals of SERDP a reality. I would be pleased to answer questions from the members at this time.

Chairman NUNN. Thank you, Mr. Secretary. I believe Secretary Schafer is next.

STATEMENT OF HON. JACQUELINE E. SCHAFER, ASSISTANT SECRETARY, INSTALLATIONS AND ENVIRONMENT, DEPARTMENT OF THE NAVY ACCOMPANIED BY MR. PAUL SCHATZBERG, MANAGER, EXPLORATORY DEVELOPMENT PROGRAM, DAVID TAYLOR RESEARCH CENTER, DEPARTMENT OF THE NAVY; AND MR. JOSEPH KAMINSKI, DIRECTOR, ENVIRONMENTAL ENGINEERING, U.S. NAVAL FACILITIES ENGINEERING COMMAND

Miss SCHAFER. Thank you very much, Mr. Chairman, distinguished members of the committee. I appreciate the opportunity to discuss the Department of the Navy's environmental research and development program, and to explain its role from the point of view of a user of technology development.

I do not run or manage the Navy's environmental research program, however, as Assistant Secretary for Installations and Environment, I am the one who supplies the problem to which the R&D programs presumably will be applied.

This afternoon, I am accompanied by Mr. Paul Schatzberg, Exploratory Development Program Manager for the Navy's David Taylor Research Center in Maryland, and Mr. Joseph Kaminski, the Director of Environmental Engineering for the Naval Facilities Engineering Command in Washington.

My prepared statement discusses how a forward-looking research and development program is essential to helping us find better ways of preventing pollution, to find more effective ways of cleaning up our installations, and to reduce the use and disposal of hazardous materials, while helping us carry out the mission of the Department of the Navy.

Our recent experience in Operation Desert Storm demonstrated quite dramatically the benefits of advanced technology. I believe the same principal applies to cleaning up the environment and preventing pollution in the future. Research into better ways of performing our day-to-day tasks can give us the environmental technology advantage.

The statement that I have submitted for the record describes how the Navy Environmental Research and Development program is helping us toward our goal of an "environmentally-sound ship" of the future. We simply cannot and do not take the old-fashioned approach to shipboard waste disposal of throwing it off the fantail.

Our research and development projects are directed toward solid waste treatment, including the elimination of discharge of plastics at sea; the reduction and elimination of chlorofluorcarbons and halons; the design and fleetwide installation of on-board oily-waste treatment systems for ships and small craft bilge water; the minimization of hazardous materials use, and, therefore, hazardous waste; and the development of black water and grey water treatment systems for our ships.

As a result of these programs, oil-water separators have been installed on more than half of our fleet. Navy-developed shipboard trash compactors are being procured to meet plastic and solid waste discharge regulations. Forty nine of 80 weapons systems lubricants containing hazardous materials have been eliminated, and CFC/halon alternatives are being evaluated, and recovery systems are being developed.

Shipboard waste management systems developed by the Navy are being shared with NATO nations who have expressed specific interest in acquiring our technology for use aboard their ships. Many of the systems that are being deployed can be easily adapted for use by the commercial maritime industry as well.

Our basic research program, funded in the 6.1 line, and managed by our Office of Naval Research, is oriented to helping us discover more about the ocean we operate in and the materials and technologies we use in ships, aircraft, and weapons. However, we find that much of our basic research also has application to solutions to environmental problems.

For example, the Naval Research Laboratory is studying the way in which marine organisms attach themselves to the hull of a ship. This will, in turn, help us develop a hull coating that will not only inhibit fouling by marine organisms, but also a coating that will be safe for the marine environment, and the workers who must apply and remove the coating.

An example of our exploratory development work, the 6.2 funding line, managed by the Office of Naval Technology, is the use of indigenous micro organisms to remediate contamination caused by fuel leaks from storage or pipeline in subsoil, in fresh water tables, and in estuaries. Stimulating the microscopic critters that live in the contaminated area to consume the pollutant could significantly reduce the cost of remediation.

Our advanced development program, funded in the 6.3 line, encompasses such projects as the elimination of toxic emissions from ordnance manufacturing; improving ordnance disposal methods; eliminating emissions from air operations, and from open detonation and open burning; new metal preparation processes in our industrial activities to reduce hazardous material use and eliminate hazardous waste; better ways of detecting and cleaning up releases of pollutants; and improvement in the quality of the water that is our principal operating medium.

All of these efforts have enabled us to significantly reduce the pollution caused by our ships, to remediate past pollution at our shore installations, and will help prevent pollution in the future.

My written statement describes more fully our environmental research program, but I would now like to focus on just one tangible product of our research and development program. As this committee knows, in 1987, the U.S. Senate ratified annex 5 of MARPOL, an international treaty that precludes the dumping of any plastics at sea. That same year, the Marine Plastic Pollution Research and Control Act was enacted, and the Navy has until 1994 to reach full compliance.

Although the Navy contributes less than 2 percent of plastic discharge to the world's oceans, we have become a leader in the development of shipboard equipment and management practices to eliminate plastic discharges from ships. Last year, we undertook a pilot program with the Council for Solid Waste Solutions to see if plastic wastes from Navy ships could be recycled into products that could be used by the Navy and Marine Corps activities.

We collected and sorted about 12 tons of shipboard plastic waste from the U.S.S. *Lexington*, the training carrier that is homeported in Pensacola, and other ships returning to the Norfolk Naval Base. The plastic waste ranged from candy wrappers to rigid containers for sonobuoys. We sent this material to three different plastic recycling manufacturers where it was converted into picnic tables, park benches, and car stops that are now being installed at bases around the country to promote our plastic recycling program.

The plastic in one bench is equivalent to the amount of plastic waste generated on a typical Navy destroyer—that is staffed by about 300 people—in about 2 days time. For over 2 years, all Navy ships have instituted source separation of plastic from the rest of their solid waste. We reduced the amount of plastic discharged overboard by about 70 percent. We are also reducing the amount of plastic taken aboard ships, and we are developing a shipboard plastic waste processor that will melt plastic waste into compact, inert blocks, suitable for recycling.

Our pilot recycling program is a visible, tangible result of our environmental research and development program. We are happy that we were able to demonstrate this program to a member of your staff, Ms. Madelyn Creedon, at the David Taylor Research Laboratory in Annapolis several weeks ago. On behalf of Navy Secretary H. Lawrence Garrett III, Mr. Chairman, I would like to present one of the recycled plastic benches to this committee. It is right here before me. It is a rather tangible evidence of the benefits of the Navy's Environmental Research and Development Program.

And if you have a chance to take a feel of it, you will find it is a very weighty example of that effort, however, I am assured that it floats.

That concludes my statement.

[The prepared statement of Miss Schafer follows:]

PREPARED STATEMENT BY HON. JACQUELINE E. SCHAFER, ASSISTANT SECRETARY OF THE NAVY (INSTALLATIONS AND ENVIRONMENT)

Mr. Chairman and distinguished members of the committee. I appreciate the opportunity to discuss the Department of the Navy Environmental Research and Development Program and to explain its role from the point of view of a "user" of technology development.

The Department of the Navy Environmental Strategic Plan contains four objectives:

— Integrate environmental awareness into all Department of the Navy planning, management and operations.

— Demonstrate effectiveness in installation restoration and compliance with environmental laws.

— Minimize future operational impacts on the environment and avoid the need for future environmental cleanup.

— Enrich the biological health of the marine environment in which the Navy operates and increase the productivity of natural resources found on Navy and Marine Corps installations.

A strong research and development program is essential to achieving these objectives. Whether we need to find better ways of preventing pollution, to find more effective ways of cleaning up our installations, or to reduce the use and discharge of hazardous materials, we need better technology to achieve our end.

Our recent experience in Operation Desert Storm demonstrated quite dramatically the benefits of a technology advantage. The allied forces used technologically superior weapon systems, communications systems and surveillance systems to win an overwhelming victory in a very short time with few casualties.

I believe the same principle applies to cleaning up the environment and preventing further pollution of the environment. Research into better ways of performing our day-to-day tasks can give us the environmental technology advantage. For example, when our research and development program identifies replacements for chlorofluorocarbons (CFCs) and halon, our environment will benefit without sacrificing personnel safety and weapon system operation.

DEPARTMENT OF THE NAVY ENVIRONMENTAL RDT&E PROGRAM

The Department of the Navy efforts in RDT&E are many and varied. I am a "customer" of the program and not intimately familiar with the technical details of each project, but I do know what the program can do for the Department of the Navy. I would like to start with a few examples of how environmental research and development has helped us toward our goal of an "environmentally-sound" ship.

SHIPBOARD PROGRAMS

The old approach to shipboard waste disposal is gone. No more "throw it off the fantail." We also have recognized that shipboard use of materials that harm the environment must be eliminated as soon as possible.

Several of our research and development projects are directed toward those goals. These include solid waste treatment, most notably the elimination of discharge of plastics at sea; reduction and elimination of CFC's and halons; design and fleetwide installation of on board oily waste treatment systems for ship and small craft bilge water; minimization of hazardous materials and wastes; and development of blackwater and graywater treatment systems. As a result of these programs oil/water separators have been installed on more than half of our fleet, Navy-developed shipboard trash compactors are being procured to meet plastic and solid waste discharge regulations, 49 of 80 weapon-system lubricants containing hazardous materials have been eliminated, and CFC/halon alternatives are being evaluated and recovery systems are being developed.

In addition, surveys of shipboard generated solid waste have been made, harbor monitoring for pollutants has been conducted, and customized shipboard sewage treatment systems have been designed. Shipboard waste management systems developed by the Navy are being shared with NATO nations who have expressed specific interest in acquiring our technology for use aboard their ships. Many of the systems that are being deployed can be easily adapted for use by the commercial maritime industry.

Unlike some of our other new technologies such as oil/water separators and trash compactors, customized sewage treatment systems and shipboard waste management systems are not yet in the fleet. They will be; we intend to take full advantage of these significant developments

All these efforts have enabled us to significantly reduce pollution caused by our ships and will help prevent future pollution. The best thing we can do for the environment is to prevent its pollution; our research and development efforts are largely oriented in that direction. Now, I would like to discuss the program by research category.

BASIC RESEARCH

Basic research, commonly called the 6.1 funding line, is managed by the Office of Naval Research. At first glance, it might appear that basic research in environmental areas is limited. However, basic research is usually categorized by science (ocean sciences, advanced materials, and information sciences) rather than by the functional area served. There is work underway within many of these science categories that will serve environmental programs. For example, a scientist at the Naval Research Laboratory is currently studying the way in which marine organisms attach themselves to the hull of a ship. This can help us develop a hull coating that will not only inhibit marine organisms from such behavior, but also is a coating that is not hazardous to the marine environment, or to the people that apply and remove the coating.

The Naval Research Laboratory is also investigating the utility of space-based millimeter wave technology. This technology has the potential to provide global environmental research sounding data on ozone, temperature, water, and the ozone killers from CFCs. Ground-based millimeter wave sensors have demonstrated the capability to monitor stratospheric ozone depletion. Additionally, we are investigating data from other space systems to determine the potential for enhanced oceanographic data and ocean pollution assessment.

Naval forces must understand their operating environment to be effective. Therefore, much basic research is focused on basic ocean science. Those research results can also be applied to environmental protection and cleanup issues. For example, in the area of bioremediation, recent attention focused on the use of microorganisms to help clean up oil spills in Alaska and the Persian Gulf. Unfortunately, there is little fundamental understanding on how bioremediation works. A Navy basic research program directed toward the fundamentals of understanding this new science will lead to a better understanding of natural and man-made mechanisms, and we believe, assist us in our own oil spill cleanup efforts.

The effects of wind stress and ocean currents must be known in order to cleanup and contain toxic spills. The Office of Naval Research sponsors fundamental research to address the processes that directly affect atmospheric and ocean pollutant movement. The recent Navy-led Heard Island feasibility Experiment generated new insights into long-range low frequency propagation, while also proving the concept of using an acoustic thermometer to quantitatively measure global ocean warming. In April 1990, the Navy was designated as the Department of Defense lead in the U.S. Global Change Research Program. We are sponsoring a research effort in fiscal year 1992 to leverage the larger environmental change programs supported by NASA, the National Science Foundation, and the National Oceanic and Atmospheric Administration.

EXPLORATORY DEVELOPMENT

Our exploratory development program, the 6.2 funding line managed by the Office of Naval Technology, contains several projects which should benefit Navy and Marine Corps environmental programs. These include, for example, development of biomarker technology to measure biological response to toxins in waste streams. Development of biomarkers will allow us to rapidly track the sources of toxins, and monitor the effectiveness of remediation. It should also help us to better comply with water quality standards at lower cost.

Another project is examining the use of indigenous microorganisms to remediate contamination in subsoil, fresh water tables, and estuaries caused by fuel leaks from storage tanks or pipelines. This could significantly reduce the cost of remediation. Safer, less polluting methods of stripping paint from aircraft; degradable plastics for shipboard use; more efficient, less polluting, less costly, shipboard solid waste systems; thermal solid waste destruction systems for shipboard use; and reducing the cost of hazardous waste treatment and disposal are all exploratory development projects with high expected payoff.

One particularly important project is in the area of graywater treatment. We anticipate more severe restrictions on the discharge of untreated graywater from Navy ships in harbors all over the world. We may need shipboard treatment that would require a volume reduction greater than 90 percent. We have, therefore, initiated a project to use volume reduction technologies and water conservation means to reduce graywater discharge. This could mean a significant space and weight saving aboard ships, and will certainly mean reduced costs for compliance and cleanup.

Other, more exotic, areas remain to be examined. For example, use of microbial enzymes for aircraft paint removal which would reduce the use of hazardous chemical and mechanical paint-stripping processes, and environmentally sound waste disposal systems for submarines that can operate at all depths and speeds are areas that need investigation.

ADVANCED DEVELOPMENT

In the advanced development category, the 6.3 funding line, we have undertaken projects in eight general areas. In the ordnance area, our tasks are oriented to elimination of toxic emissions from ordnance manufacturing, developing environmentally sound maintenance technologies that will also minimize the use of hazardous materials and generation of hazardous waste, development of ordnance testing methods and facilities to reduce environmental impact on ranges and test facilities, improving ordnance disposal methods and improving site restoration and ordnance storage capabilities. All these efforts will reduce or prevent adverse environmental impact, reduce cleanup requirements, and reduce our cost of operations.

Reduction and control of air emissions is important for current and future compliance. We are working on ways to reduce and eliminate air pollutants, air toxins, and ozone depleting substances. We are also working toward eliminating emissions from open burning and open detonations. We have already made significant progress in reformulating ship and aircraft paints to comply with air quality regulations.

Minimization of hazardous waste is one of my personal goals. Our strategic plan states that we will achieve a 50 percent reduction in hazardous waste disposal between fiscal year 1987 and the end of fiscal year 1992. We won't stop there. We are developing technologies with which we hope to eliminate hazardous waste disposal in the Department of the Navy. New metal preparation processes that eliminate chrome and cadmium waste, as well as recycling of plating baths, derusting chemicals, and solid hazardous waste are under study. Ways to reduce the use of hazardous materials, extended shelf life, and improved hazardous material control procedures are all in advanced development.

In the 6.3 area, we are also investigating better ways of detecting, containing and cleaning up releases of hazardous material. Restoration can be an extremely expensive process; we are developing better technology to allow more efficient use of our resources.

We are also researching the area of risk assessment; that is, how to estimate when, where and how our environmental problems can occur. Better risk assessments will allow us to get ahead of potential problems, reduce the need for regulatory oversight, and reduce the magnitude of required restoration.

In order to ensure that we can continue to operate in the marine environment, we must demonstrate that we are responsible stewards of those water resources. We are developing and testing technologies to reduce discharges, to develop better monitoring and remediation, and to improve the quality of our water resources. These projects are the key to preventing pollution, reducing the need for cleanup, reducing hazards to our people and to enriching the biological health of our natural resources.

We are also greatly concerned about the effect on our own Navy people of the environment in which they must live and work. This is an integral part of "quality of life." One particular concern is the effect of radiation in the confined spaces aboard our ships and in medical treatment areas afloat and ashore. We are developing a new generation of radiation detection instruments for personnel protection. We are also continuing our efforts to combat the effects of asbestos, lead and indoor air pollutants.

One design result of the Department of the Navy Environmental Strategic Plan is that all hands be environmentally aware. A set of projects within the 6.3 area seeks to enable us to design platforms and weapons that can operate within environmental constraints and still achieve required military performance. Our acquisition policies and systems maintenance management strategies can and will be designed to achieve effective systems that are compatible with the environment.

The advanced development categories I have described are part of the Department of the Navy Environmental Technology Development Plan (TDP) currently being prepared by the Deputy Chief of Naval Operations (Logistics). The TDP is being used to bring together the needs of the Department's operating commands, the requirements of environmental law and regulation, and the capabilities of the Navy RDT&E community to ensure that our research is properly focused and used.

Mr. Chairman, that is my summary of the Department of the Navy Environmental Research and Development Program. I believe it is a forward-looking, well-founded program. It is responsive to our strategic plan and to the requirements of environmental law. I have the utmost confidence that the program will achieve our goals. As a "user," one who needs the program to do the job, I am counting on it. Thank you for this opportunity, Mr. Chairman. I would be pleased to answer any questions.

Chairman NUNN. Thank you very much. Considering our Ethics in Government Act, it looks like to me it is worth about $99. Would that be a good guess. [Laughter.]

Miss SCHAFER. There is a lot more waste to put into things where that came from.

Chairman NUNN. I like that. That is nice looking. We appreciate it.

Miss SCHAFER. It certainly is better looking than what the alternative is, which is in solid waste landfills or floating in the ocean.

Senator GORE. I thought that was a mourner's bench, Mr. Chairman. [Laughter.]

Chairman NUNN. I can think of a number of purposes we could use that for, indeed.

What percentage of the plastics did you say you no longer dump?

Miss SCHAFER. We reduced the discharge overboard from our ships by 70 percent since we started with this program a couple of years ago. Now, a lot of that is through management—at substantial inconvenience, I might add, to our sailors, who are cramped for space aboard the ships that they work and live on. However, they are enthusiastic participants in this recycling program, and this is an effort to take that one step further, to actually reduce the volume of waste that goes into landfills and to try to find something useful for the products to prove that recycling does work.

Chairman NUNN. I have gotten a lot of good feedback about the Navy and the attitude the Navy has had about this entire program and the environmental efforts. So we appreciate it very much.

Miss SCHAFER. Thank you, Mr. Chairman.

Chairman NUNN. Thank you.

Dr. Hecker, we are pleased to have you before us again.

STATEMENT OF DR. SIEGFRIED S. HECKER, DIRECTOR, LOS ALAMOS NATIONAL LABORATORY

Dr. HECKER. Thank you, Chairman Nunn, and other distinguished members of the panel. I will see whether I can get a word in edgewise from the table here. I have a written statement that I would like to submit for the record.

Chairman NUNN. Without objection, it will be part of the record.

Dr. HECKER. Thank you. I am here today to provide you with input and response of the three nuclear weapons laboratories, Lawrence Livermore, Los Alamos, and Sandia National Laboratories, to the initiative on strategic environmental R&D. Late last year, I was asked by the Department of Energy to pull together a response from the three laboratories.

The legislation, of course, is quite comprehensive. We prepared an overall program plan that is quite broad and wideranging, and it essentially focuses on using the Defense-supported R&D capabilities at these three laboratories to respond to the congressional initiative.

And today, what I would like to do is to focus on three thrusts that are essentially the basis of this program plan that we have put together. These three are, first of all, advanced data collection capabilities for global climate measurements. Second, a comprehensive energy utilization model of the Defense complex. And third, simulation modeling and technology development for environmental cleanup with the emphasis on waste minimization.

Now I would like to say at the outset that I selected those as the three thrusts because they do two things. One is, they do allow us to apply the capabilities developed primarily for Defense in this direction. And second, I think they provide a mechanism by which the SERDP initiative can leverage the current Federal investment that is made in environmental R&D.

I would like to spend a little time to explain the first initiative in some detail because it will give you the sense of what the laboratories can contribute. And that is this issue of applying the Defense technologies for early climate change measurements, and I will explain what I mean by early.

Let me first state the overall problem. As you well know, there is considerable controversy over the technical issues that underlie climate change. The increase in the so-called Greenhouse gases, CO_2, methane, and so forth, is unquestionably real. However, the question of global warming is still one that is hotly debated. And some people still do not quite agree on the sign of the effect. Of course one reason that we are having this difficulty is that the effect of the clouds on the earth's overall thermal radiation balance is extremely large.

And as you well know, there are competing effects. One is the clouds act to reflect sunlight and therefore cool the earth. They also affect the earth by trapping heat and therefore give rise to an overall increase in temperature. Now, there were pioneering satellite measurements in the mid to late 1980s from NASA and NOAA with their instrumentation. And they showed that these competing effects are extremely large, in fact, that they are several times as large as the expected rise in temperature one would expect from a doubling of CO_2. And so, clearly, there is an enormous effect of the clouds. The overall effect was found to be a cooling effect.

Unfortunately, these instruments which gave this pioneering data are no longer operational. Now NASA is planning to have new instruments on board what is called the Earth Observing Satellite, EOS, in the late 1990s. However, leading climate researchers today, such as Dr. Ramanathan, who made some of these early observations and who now is at the California Space Institute at UC San Diego, are desperate to fill in this almost 10-year gap in this critical information on the thermal-radiation balance. And that is where the laboratories come in.

We have explored with Dr. Ramanathan, and also with Dr. Sally Ride, who now heads that institute, the possibility of getting quick access to space with small satellites and a suite of advanced sensors. And you could ask why the three nuclear weapons laboratories? Well, the answer is that Sandia and Los Alamos have almost 30 years of experience, each, in space instrumentation, and that, as you well know, is associated with the monitoring and verification technologies associated with the 1963 Limited Test Ban Treaty, which banned nuclear explosions in the atmosphere and outer space, of course.

And Los Alamos, over that time period, has flown over 300 different sensors on 40 satellites. Most of these were for x-ray and gamma ray observations, including, actually, one that we just flew on the recent shuttle, Discovery, where we had some difficulty getting a tape recorder that was supplied to us working. But it was hooked up eventually and we managed to get some very good x-ray data.

Lawrence Livermore, as you know, has significant experience in the past few years of also working with sophisticated sensors that have substantial on-board processing capabilities for Strategic Defense research.

At Los Alamos, we are also currently completing a small satellite that we call ALEXIS, for launch on the DARPA plane-based PEGASUS vehicle this September. We have performed all of the integration, including the satellite bus that was produced for us by a small company in Virginia. ALEXIS weighs only 220 pounds. It has 6 x-ray telescope sensors. And it basically took us 3 years from the inception of this concept to launch, which will be this September. And the total cost is rather low: $15 million.

So we have extensive experience in space, developing sensors, and working with the appropriate agencies. What we have proposed is to use this capability, then, for the three labs to fill in the gap in the thermal radiation measurements and to be able to do this very, very quickly, and to have the laboratories develop the sensors. The three labs would complement each other very nicely in the suite of sensors that they would put up on a satellite.

In my written statement, I explained the sensors and what we propose to do in quite a lot of detail. In addition, I also talk about the relationship of that activity with the DOE's Atmospheric Radiation Measurement Program. So I think overall, we are in a very good position to contribute in the satellite program. We are collaborating with the people at the California Space Institute. Sally Ride, as I mentioned, and Ed Frieman, Director of Scripps, are very enthusiastic about doing this. And we would work very closely with DARPA in order to make sure that we have access to space through their launch capabilities.

So I believe that this initiative would be precisely in the spirit of your legislation. And that is to use the Defense expertise for research in the environmental arena.

The second and third ideas, I will present very briefly. The second one is energy utilization modeling of the Defense Complex. As you well know, the Department of Defense is a very large energy consumer with a total energy bill of about $10 billion annually. They use about 1.85 quads of energy. There have been significant advances in the past few years in some of the alternative energy technologies, such as solar photovoltaic capabilities, also battery capabilities. The real question is the utility these new technologies, or different forms of energy utilization, have within the Department of Defense and their impact on the overall question of cost, of efficiency, and of being able to meet the environmental regulations—both those of today as well as those of tomorrow.

We believe the one thing that we could bring to the table here, again, in the spirit of using Defense-developed capabilities, is to develop a comprehensive model for simulating the energy utilization of the Department of Defense. Now again, why the weapons labs? We have over the past decade pioneered the use of what is called object-oriented programming and artificial intelligence for large-scale dynamic simulations. We have done this for the Department of Defense, for instance, battlefield simulation and strategic force targeting as well as for potential strategic defense deployments.

So we have developed the capabilities to do this real-time simulation modeling and what we suggest now is that we use that same approach to take a look at the overall question of energy utilization. We think that the SERDP can leverage, this extensive expertise in the laboratories to work closely with the Armed Services, and to provide them with the tools to make these difficult decisions as to where to go for the energy supplies of the future.

I think these tools will allow the services to get ahead of the regulatory cycle by becoming, what I call, kind of a model energy consumer as well as a model environmental citizen.

Let me just add that from a standpoint of implementation, clearly when it comes to that point, there will be contributions from many other sources. Our sister laboratories, energy-related laboratories, clearly have a lot of expertise in these energy technologies, and American industry, of course, would eventually have to implement the technologies into the Defense Complex.

In the area of environmental management with the focus on waste minimization, one way we could contribute is to use the extensive modeling capability to take a look at the entire Defense Complex waste-related problem. And that is to help, in some sense, one agency learn from the other agency where its difficulties are and what its remediation strategies are.

But most importantly, what I would like to concentrate on here is the question of waste minimization and especially the angle of the Department of Energy and its thoughts about Complex 21, the nuclear weapons complex of the next century. We have here an opportune possibility of getting in at the ground stages of defining how Complex 21 should be designed with energy efficiency, environment, and waste minimization in mind at the beginning. Within the DOE complex, since it is a small integrated contractor network and family, we have the capability of working everything from the design end—as to how one designs nuclear weapons, what sort of materials you use in the design—to the actual manufacture, and to its effect on the waste that is produced.

And so using SERDP as a catalyst to get that effort going, I think, would be extremely helpful from a Department of Energy standpoint. But then again, what I would like to see is to have us use that same methodology to work with the Department of Defense for tackling and looking at its waste minimization problem. That is much more complex because it involves hundreds of major defense contractors. And so it would be more difficult to tackle. But again, I think one could leverage, or get the benefit of the SERDP involvement, in order to get these activities going for both Departments.

So those are the three points. And what I hope that I have done is to give you some examples of these very briefly as to how the three weapons labs could use their defense expertise to help out in the environmental arena. At this point, we continue to work with the Department of Energy to help them to prepare an overall program plan that will be worked into the Strategic Environmental R&D initiative.

Thank you for your attention.

[The prepared statement of Dr. Hecker follows:]

PREPARED STATEMENT BY SIEGFRIED S. HECKER, DIRECTOR, LOS ALAMOS NATIONAL LABORATORY

EXECUTIVE SUMMARY

The Strategic Environmental Research and Development Program (SERDP) provides an excellent opportunity for the three DOE nuclear weapons laboratories (Lawrence Livermore National Laboratory, Los Alamos National Laboratory, and Sandia National Laboratories) to utilize defense-supported capabilities to contribute to solutions to the environmental concerns of the Nation's defense complex and the impact of human beings on planet Earth.

Today, I will focus on three thrusts where the three laboratories can leverage their core technical competencies in support of the SERDP objectives.

First, the laboratories, in conjunction with the Scripps Institution of Oceanography and the California Space Institute, could have an immediate impact on advanced data collection for global climate measurements. The laboratories have developed exceptional expertise for space-based sensors as a result of arms control and verification monitoring programs and as part of strategic defense research programs.

Recent experience in integrating space experiments including small, inexpensive satellites puts the laboratories in an excellent position to fill a serious gap in climate change monitoring. We are proposing to field a suite of sensors flown on small satellites to provide prompt information on the effect of clouds and trace gases in the atmosphere upon the Earth's thermal radiation balance. This information will fill a critical need that will otherwise not be met until the comprehensive Earth Observing System satellite is launched by NASA near the end of this decade.

Second, we believe that the defense complex should take a new and comprehensive look at energy utilization at its facilities woldwide and evaluate new environmentally conscious energy technologies, energy efficiency, and alternative fuels. The goal should be to improve energy efficiency, reduce vulnerability to foreign supplies, and mitigate the environmental impact. In other words, the defense complex should strive to get ahead of increasingly stringent regulations by becoming a model customer and citizen.

The three weapons laboratories have pioneered the use of object-oriented programming, artificial intelligence, and rapid prototyping for large-scale simulations as part of this defense portfolio. We propose using these capabilities to develop a comprehensive model of energy utilization in the defense complex and to explore the financial and environmental impacts. This will require close collaboration with the armed services to define the different peace-time and war-time requirements and the special concerns of the individual services. Implementation of specific recommendations from these models will require close coordination and support not only from the services, but from the other DOE laboratories and industry.

Third, the defense complex faces many other environmental issues including cleanup and disposal of conventional chemical and biological munitions; propellants; radioactive wastes; and groundwater and soil contamination from fuels, propellants, solvents, and metals.

The SERDP initiative can help to leverage the environmental management strategies of the various Federal agencies. Again, a comprehensive simulation model of the entire defense complex would prove extremely useful. The three weapons laboratories have such expertise that is now being applied within the Department of Energy.

The key to future compliance at an affordable price is to prevent the generation of waste rather than treating it at the tail pipe. This is the strategy adopted by the

DOE for its nuclear weapons complex of the future (Complex 21). The SERDP provides an opportunity to develop a comprehensive waste minimization strategy at most opportune time—during the definition stage of Complex 21. We propose to have the three laboratories support the DOE in this endeavor and to extend this concept to the much broader Department of Defense problems.

These thrusts represent the response of the three nuclear weapons laboratories. Let me restate these three: (1) Advanced data collection for global climate measurements, (2) comprehensive energy modeling, and (3) comprehensive simulation modeling and technology development for environmental cleanup and waste minimization. Only the first of these is developed extensively in this testimony. The other two are based generally on a program plan developed by the laboratories for the DOE.

I. BACKGROUND

The Strategic Environmental Research and Development Program (SERDP) legislation provides a mechanism for the Department of Defense (DOD) and the Department of Energy (DOE) to enhance their capabilities to meet environmental obligations. The legislation strongly encourages the departments to leverage research and technology developed for defense purposes to benefit both government and private organizations in the development of energy technologies and other technologies to address environmental concerns such as monitoring, restoration, waste minimization, and hazardous material substitution. The departments are directed to use, to the maximum extent possible, the talents, skills, and abilities residing at the Federal laboratories.

I was asked by the DOE to coordinate a research program plan from the three DOE nuclear weapons laboratories (Lawrence Livermore, Los Alamos, and Sandia National Laboratories) that use the special skills of these laboratories. The three laboratories responded enthusiastically and we delivered a draft program plan to DOE in January. Today, I will present the next iteration of these ideas resulting from further discussions at Los Alamos and some (albeit limited discussions because of time restrictions) with our colleagues at Lawrence Livermore and Sandia.

First, I wish to provide brief background information about the three laboratories to help establish our credentials to contribute. Together the three laboratories employ 24,000 people, including almost 10,000 scientists and engineers working at the forefront of defense and energy technologies. Approximately 75 percent of our work is defense related with the majority of the remainder being in research, energy, and environment. Hence, the opportunity of leveraging defense R&D to impact environmental technology concerns is immense.

To fulfill the primary mission of helping to ensure nuclear deterrence, the laboratories have historically performed in a research-to-retirement mode for nuclear weapons. That is, the laboratories are vertically integrated to perform research, both basic and applied, to develop technology, and to participate in the manufacturer and customer interface process. Because of the special nature of the nuclear weapons program, the laboratories have developed a very broad science and technology base and a set of distinctive core competencies that allow them to contribute to other important national problems.

The core competencies of Los Alamos are reasonably representative of the other two laboratories. These core competencies are:

— Nuclear technologies
— High-performance computing and modeling
— Dynamic experimentation and diagnostics
— Systems engineering and rapid prototyping
— Advanced materials and processing
— Beam technologies (lasers, particle beams, etc.)
— Theory and complex systems

The laboratories have put these core competencies to good use in a variety of applications as diverse as responding to Desert Storm and the mapping of the human genome. All three laboratories are currently involved in DOE environmental R&D.

II. THE STRATEGIC ENVIRONMENTAL R&D PROGRAM CHALLENGE

The SERDP legislation is broad and comprehensive. We will focus on those aspects of the legislation to which the three laboratories bring their core competencies, particularly those that leverage our defense-supported R&D. We will also attempt to concentrate in those areas where SERDP support will complement, or help coordinate, the existing environmental R&D programs in Federal agencies. Such programs include the $1 billion U.S. Global Change Research Program coordinated by the Federal Coordinating Council for Science, Engineering, and Technology; the $3.4 billion DOE environmental restoration and waste management program; and the $1.0 billion DOD effort.

Scientists and engineers at the three laboratories generated over 700 ideas that were submitted to us. Many of these ideas are included in the laboratories' draft program plan and in the latest DOE plan. For the purpose of this hearing, I have grouped our ideas into three thrusts that constitute the initial building blocks of a comprehensive, multiyear SERDP. These thrusts are:

A. Defense technologies for early climate change measurements
B. U.S. defense complex as a model customer and citizen
C. Environmental management—modeling and waste minimization

The first is developed in considerable detail here. The other two are discussed in more general terms. All three provide great opportunities to leverage the capabilities of the three weapons laboratories in response to the SERDP objectives. Some of our proposed initiatives have a strong coupling to universities, others will develop close links with U.S.industry during the implementation stages.

III. STRATEGIC ENVIRONMENTAL RESEARCH AND DEVELOPMENT THRUSTS

A. Defense Technologies for Early Climate Change Measurements

Evidence is mounting that human activities directly affect the climate of planet Earth. The production of "greenhouse" gases such as carbon dioxide and the depletion of atmospheric ozone by man-made chlorofluorocarbons are two identified areas of major concern. The technical issues underlying climatic changes are not well understood, and our ability to formulate strategic policy decisions—in a global context—is severely limited. Accurate measurements of pertinent atmospheric variables and a fundamental understanding of the relevant atmospheric processes, coupled with the latest computer models, are necessary to develop our ability to assess and predict the impact of human activities on the Earth's climate. The laboratories can provide a capability for (1) advanced data collection, (2) Earth system modeling with high-performance computers, and (3) improved utilization of existing data.

I am particularly excited by the opportunity that SERDP provides for the laboratories to contribute to this national effort in a meaningful and timely way with a program of advanced data collection that uses current technologies of the DOE, the DOD, industry, and the academic community.

NASA is developing a major program—the Earth Observing System (EOS)—to address in a comprehensive way, with multiple, very large space platforms, a wide spectrum of global climate issues. However, there is a serious deficiency in our current ability to collect data on certain atmospheric parameters that are critical to our understanding of Earth's climate. I am speaking specifically now about the Earth's thermal radiation balance and the effects of clouds and trace gases in the atmosphere upon this balance. It is fundamental to measure the amount of thermal energy received by the Earth from the sun and the amount radiated away into space, i.e., the Earth's thermal radiation balance. These measurements were performed quite well with scanning radiometers on the NASA ERBS (Earth Radiation Budget Satellite) and two NOAA satellites (NOAA-9 and -10) during the mid-to-late 1980s as part of the Earth Radiation Budget Experiment (ERBE). But those sensors are no longer providing data, and there apparently won't be more data until the late 1990s when EOS will be launched. This interruption in data gathering represents a critical gap of nearly 10 years in our data base.

What did we learn from the earlier ERBE data? Among other things, Dr. V. Ramanathan, formerly of the University of Chicago and now with Scripps Institution of Oceanography/UC San Diego and the California Space Institute (CalSpace), and coworkers studied the ERBE scanner data to determine what the global effect of clouds is on climate, whether they contribute mainly to warming the Earth by helping to trap the heat in an insulating blanket or whether they mainly help cool the Earth by acting like a solar reflector. These competing insulating and cooling effects of clouds are not small. They are each, in fact, many times the size of the predicted effect of doubling the CO_2 concentration in the atmosphere. Thus, it is essential to understand the effects of clouds so that we can reliably predict the impact on climate of increasing concentrations of greenhouse gases. Dr. Ramanathan and coworkers took the first major steps in understanding the global effects of clouds by studying the ERBE scanner data. But for now there are no more ERBE scanner data, and there isn't likely to be any more data of comparable quality for almost a decade.

Recently, Los Alamos scientists met with Dr. Ramanathan and Dr. Sally Ride, Director of CalSpace, to discuss whether there is something we could do about this impasse. It appears that the answer is yes. The solution would involve a fast-track program to fly one or more small satellites carrying Earth-radiation measuring instruments incorporating new sensors with miniaturized electronics and computer processors.

DARPA, as a part of its "LIGHTSAT" program, has developed a quick-response, inexpensive launch capability called PEGASUS. The DOD has invested heavily at Lawrence Livermore in the development of small, sophisticated sensors for use in strategic defense. Los Alamos and Sandia have extensive space instrumentation capabilities developed over the past 30 years in the DOE Arms Control Program. Los Alamos is currently completing a small satellite, called ALEXIS, for launch on PEGASUS this September. ALEXIS, a 220-lb. satellite, will carry six advanced technology X-ray imaging telescopes, plus an RF monitoring instrument, and will have about a half gigabit of memory with a substantial microprocessing capability. The total cost of this satellite, exclusive of launch costs, is under $15 million and will take less than 3 years from concept to launch.

Under the SERDP umbrella, we believe the three DOE weapons laboratories could build and, with DARPA support, launch a series of small climate satellites to bridge the gap until EOS is operational. After EOS is launched, these satellites would continue to provide useful ancillary data. In view of the urgency to obtain data on Earth's thermal radiation balance, the first satellite would be developed in collaboration with CalSpace and would be dedicated to providing new radiation-balance data within 3 years at a cost of about $20-$30 million. CalSpace would provide scientific collaboration, and we would ask DARPA to provide the PEGASUS launch. The challenge is to provide the climate research community with radiation-balance data accurate at the 1 percent level as soon as possible.

I've personally talked with Ed Frieman, the Director of Scripps Institution of Oceanography, about this idea and received his encouragement. The laboratories are ready and eager to take on this challenge. Obviously, such a program will require multiyear funding. Specifically, for the initial SERDP fiscal year 1991 funding we would suggest beginning the detailed design and development of the instrumentation to support the proposed satellite program. This effort will also provide an extremely valuable addition to the current DOE program in Global Change Research, which is planning to use Remote Pilotless Vehicles (RPVs). The instruments to be used in the satellite program are small, light-weight and low-power; they also feature rather flexible designs. Variants of these instruments are therefore appropriate to the RPVs to be used over land sites in the DOE Atmospheric Radiation Measurement (ARM) program.

Specific instrument designs are presently being considered by the DOE laboratories for ARM. Funding from the SERDP would permit fast-track development of such sensors tailored specifically for satellite operation. A Los Alamos radiometer is being designed to address the radiation balance. It will cover the wavelength range from 0.2 to 50 microns in several continuous spectral bands with a radiometric accuracy at the 1 percent level. This relatively crude wavelength resolution is used to identify possible critical areas in thermal radiation-balance uncertainties. The excellent accuracy of the instrument results from detailed ground-based calibrations referenced to National Institute of Science and Technology standards. The calibration can be maintained on board by including reference sources in the instrument. The chosen detectors have proven stability, and they measure radiation intensity with respect to the on-board calibration system, thus providing almost continuous calibration.

Because clouds have such a very large influence on climatology, data on the effects of cloud sub-structures on local and regional radiation balances are needed. Lawrence Livermore National Laboratory is looking at the application of its advanced sensing technology to three-dimensional imaging of clouds. The excellent resolution of such camera systems permits resolution of cloud sub-structures.

Spectroscopy with good wavelength resolution can provide key information on atmospheric composition and on cloud properties including height, reflectance, droplet and ice particle sizes, water/ice percentages, and ground reflectivities and emissivities. Sandia National Laboratories is designing a spectrometer for this purpose, with 10 selected narrow spectral bands between 0.66 and 12 microns and a spatial scanner that selects locations in the direction perpendicular to the platform motion. Again, this instrument will be calibrated absolutely.

The fourth instrument under consideration for satellite deployment is a LIDAR laser scattering system. All three laboratories have extensive experience with lasers and LIDARs. By studying the scattered laser light, one can accurately profile cloud top heights and detect and characterize thin (perhaps even sub-visual) cirrus clouds.

More sophisticated LIDAR techniques could be implemented in future systems as desired.

We propose to work with the Scripps staff, and other climatologists as appropriate, both in defining the final specifications for the instruments and in interpretation of the collected data. In particular, the analysis of ERBE data by Dr. Ramanathan and co-workers forms an especially important basis for radiometer data analysis.

The laboratories would provide their own payload integration but use private industry to supply as many components as possible. Our experience in this area has been excellent. For example, Los Alamos successfully launched the BEAR (Beam Experiment Aboard Rocket) experiment on July 13, 1989. Los Alamos designed the experiment (an accelerator to produce a neutral particle beam in space) and did the payload integration. Similarly, we are doing the same for the ALEXIS small satellite launch this September.

The key to the proposed experiments is to do them rapidly and at low cost. We view this proposed program as a great opportunity for SERDP support to make a dramatic difference in understanding and dealing with man's impact on the environment.

Interpretation of the early climate change measurements and projections of how these affect the climate in the future will require extensive, mathematical Earth system modeling with high-performance computers. Models that couple the atmosphere, ocean and land surfaces are essential to permit simulation of the global climate and biochemical cycles of the atmospheric, marine, and land surface environment.

The three laboratories possess the world's most powerful high-performance computing capabilities. All have extensive experience in climate modeling and all are involved in the DOE Computer Hardware and Mathematical Modeling Program (CHAMMP). Especially noteworthy are the recent advances in running climate change models on massively parallel computers such as the Connection Machine-2 at Los Alamos.

The three laboratories could contribute significantly in

(a) improved atmospheric and oceanic models to treat global biochemical cycles of nitrogen, sulfur, and carbon,

(b) development of a prototype global ecosystem model that represents the interplay of vegetation and hydrology on the land surface, and

(c) conversion of existing models of climate system components to high-performance (e.g., massively parallel) computers as building blocks for a full Earth system model.

In addition, interactions with universities and other climate modeling centers will help to improve the physics going into the models. At Los Alamos an ongoing collaboration with Scripps is leading to much better modeling of the coupling of oceans and the atmosphere. We would perform sufficient modeling with SERDP support to help design critical experiments for climate measurements, interpret the results, and project the importance of the findings. We would rely heavily on our ties to the DOE CHAMMP effort.

In addition to the early climate measurements and the associated modeling, the three laboratories will also explore improving utilization of existing data as suggested in the SERDP legislation. Two specific opportunities are:

a. Improved utilization of existing satellite data, especially from DOD and DOE sensors. For example, the microwave data from the Defense Meterological Support Program provide the most accurate measurement of total water vapor content, a key parameter in understanding greenhouse warming and in unfolding other data. Additionally, our computational and modeling resources, in conjunction with existing high-resolution data, e.g., from the Advanced Very High Resolution Radiometer, will allow us to explore regional climatologies, thereby complementing and extending present community efforts, which focus on global climatologies.

b. The use of advanced laboratory techniques to extract more information from existing atmospheric and geologic samples. Advanced techniques, such as accelerator mass spectrometry and gas mass spectrometry, with their increased sensitivity can be used to reveal details about past climates and the role of oceans (from ice cores and ocean sediments), to narrow the uncertainty in our knowledge of carbon dioxide sinks (from carbon-14 uptake by soils), and to improve our knowledge of atmospheric circulation and chemistry (from oxygen-18 and cosmogenic tracers).

B. U.S. Defense Complex as a Model Customer and Citizen

The SERDP legislation encourages the application of environmentally sound, energy-efficient, technologies within the Department of Defense. With an annual energy bill of $10 billion and consumption of 1.85 quads (1/3 billion barrels of crude oil), the DOD is a major energy consumer (81 percent of Federal energy consumption and 2 percent of the total U.S. consumption). Energy efficiency and vulnerability to foreign energy sources are major concerns at DOD. In addition, defense complex facilities along with other government facilities have been playing catchup on meeting increasingly stringent environmental regulations. To avoid major operational disruptions in the future we believe that the defense complex must not be caught in a reactive mode, but instead must get out ahead of the regulations by becoming a model customer and citizen.

Current defense installations rely principally on fossil fuels for their energy needs. Land-based vehicles depend primarily on imported petroleum. Many of the bases, munitions production facilities, repair facilities, and the like are struggling to comply with current environmental regulations. The Clean Air Act and future regulations will bring even greater challenge. Private industry has developed more environmentally benign energy technologies than those currently in use. The DOE laboratories (all nine multiprogram laboratories) have developed many advanced energy technologies that are close to industrial deployment. However, the impact of any of these on energy efficiency, foreign vulnerability, and environmental quality must first be evaluated.

The three weapons laboratories are, therefore, proposing to develop a comprehensive model for energy utilization at DOD facilities worldwide and the impact of energy use on environmental quality. Over the last decade, the laboratories have pioneered the use of object-oriented programming, artificial intelligence, and rapid prototyping for large scale simulations used in DOE and DOD. Future capabilities include integrating parallel and distributed processing, neural networks, high-speed networking, and advanced graphics to support the next generation of problem solving tools. The laboratories have supported DOD in modeling critical operational and logistic strategies including tactical battlefield models, strategic force and targeting models, and potential strategic defense deployments.

The three laboratories also have substantial experience in energy and environmental modeling. Los Alamos is currently working with the Mexican Petroleum Institute to collect data and model Mexico City air quality and the effects on it of various energy alternatives and environmental mitigation strategies. Sandia and Lawrence Livermore are developing detailed data bases on energy technology options in the United States that can result in significantly enhanced efficiencies while simultaneously greatly reducing emission releases, effluent discharges, and solid waste disposal to the environment. Sandia has continued to develop cost/risk/benefit methods that could be applied to the DOD complex.

Advanced models would allow decision makers to select among the myriad of technology choices for conservation, energy supply and energy utilization and project the impact of such choices on energy costs and efficiencies, as well as environmental impact (including the question of compliance with current and projected regulations). Clearly, this type of effort would require close collaboration between the DOD and the three laboratories. Consultation and collaboration with the Environmental Protection Agency (EPA) will also be required to assess the impact of regulations and to do risk/benefit analyses.

We envision that the models will allow the DOD to assess the benefits of alternative energy technologies such as solar, thermal, wind, photovoltaics, geothermal (including geopressure and hot dry rock) and alternative fuels. Recent advances in photovoltaics and battery storage technologies with commensurate increases in energy conversion efficiencies and performance may be ripe for exploitation at many military installations. The cost and/or logistics of the distribution of power must also be included in the comparison of alternative and conventional energy sources.

The effects of conservation measures can be evaluated with the models. The same applies for changes in power generation, distribution, and utilization processes and technologies. The conversion of DOD ground transportation systems (primarily diesel trucks) and stationary diesel engines can be examined on computers to ascertain the potential benefits.

The SERDP could become the fulcrum to move DOE and DOD into the role of model energy stewards. They could set a new standard for environmental care while reaping the benefits of much improved efficiencies.

If the models demonstrate significant benefits from alternative energy sources or other measures considered, then we propose involving industry and the other DOE laboratories to help the DOD implement the most favorable changes. Industry should take the lead in implementing mature technologies. The DOE laboratories working closely with industry can help to develop those technologies that require additional maturation. In the past few years the DOE laboratories have developed several mechanisms, including Cooperative Research and Development Agreements

(CRADAs), to work closely with industry. This cooperation would allow the DOD and U.S. industry to leverage the large Federal investment in energy technologies at the DOE laboratories over the past 15 years.

We believe it possible that several opportunities for improved energy efficiency at DOD facilities could be explored early, during the modeling stage. For example, a candidate site already identified by a cooperative DOD/DOE study effort is the naval facility at North San Clemente Island. Here, distribution voltage support is an issue. A consultant in the DOD Office of Energy Policy has begun discussions with base personnel and Sandia National Laboratories at Livermore on the use of photovoltaics to solve the problem. On-going collaborative efforts between several U.S. electric utilities and the DOE laboratories studying distribution line loading, anticipated load growth, site availability, economic feasibility, and resource evaluation can be used as leverage.

Through advanced modeling and implementation, the DOD facilities can become highly efficient use-centers, exceeding compliance with environmental standards while depending much less on foreign energy supplies.

If the models for the Department of Defense prove successful, they could be readily applied in the private sector to lead to clean, efficient, and dependable energy. The SERDP initiative can therefore serve as a potential catalyst for much greater impact on energy and the environment.

C. Environmental Management—Modeling and Waste Minimization

Interagency coordination and environmental modeling. In addition to the environmental impact resulting from energy utilization as just discussed, the defense complex faces many other environmental issues. As a result of increasingly stringent regulations, many defense sites do not meet current Federal and State regulations. Characterization of the problem and remediation to bring the sites into compliance may cost hundreds of billions of dollars.

Both the DOD and DOE defense complexes face formidable challenges. In addition to the usual industrial hazardous contaminants, the problems at DOD sites include cleanup and disposal of conventional, chemical and biological munitions, and of propellants, and groundwater and soil contamination from fuels, propellants, solvents, and metals. The DOE nuclear weapons complex shares many of these problems and, in addition, has radioactive wastes (and mixed radioactive-hazardous wastes).

Both the DOD and the DOE have large programs for environmental remediation and waste management. Each has a significant research component to develop methods to clean up safer, better, cheaper, and faster. The EPA has extensive programs on risk analysis. The SERDP effort should serve to formalize cooperation among the three agencies. We see a need to provide a much stronger cross coupling and coordination of cleanup strategies and technologies.

Hence, we again propose that the three weapons laboratories develop a comprehensive model of the DOD and DOE defense complexes to examine environmental remediation strategies with a focus on how one agency can benefit from the experience of the other. For example, Los Alamos could draw upon its experience as the lead laboratory in applying a cost/benefit model to evaluate new environmental characterization and remediation technologies for the DOE Environmental Restoration and Waste Management Office of Technology Development.

We have also developed a sophisticated model of a new plutonium production facility for a follow-on to Rocky Flats. This model evaluates the impact of new processes and waste minimization technologies associated with plutonium production. Hence, a comprehensive environmental model funded by SERDP would draw heavily on current defense-supported research. Close coordination with EPA during the modeling phase is required to develop a risk/benefit based approach to environmental remediation.

Waste minimization. The key to future compliance at an affordable price is to work on the front end to avoid generating waste rather than cleaning it up at the tail pipe. This front-end focus will require close examination of new facilities, equipment, processes, and operational procedures. The DOE has recently developed a comprehensive plan for its nuclear weapons complex of the future, called Complex 21. Implementation of this plan will require substantial consolidation of existing facilities, construction of new facilities, and the development of new technologies and processes. All of these activities will have a major impact on future environmental concerns in the complex.

A comprehensive model of Complex 21 is currently being developed to assess the ability of future manufacturing operations to achieve "zero discharge" to the environment. The simulation modeling capability is an essential element in predicting the operational performance of Complex 21 during the technology development phase. The modeling addresses costs, risks, and benefit evaluations by incorporating risk-based decision management tools.

Because the DOE nuclear weapons complex is an integrated complex, the waste minimization effort includes everyone from the weapons designer to the manufacturer. This integration will provide maximum impact. The DOE Defense Programs Office of Reconfiguration has assimilated many ideas from the three weapons laboratories for waste minimization in Complex 21. These ideas will be part of the DOE's response to the SERDP legislation. We support these ideas but will not elaborate on them here.

We do wish to develop the idea of extending the DOE waste minimization approach to the broader DOD defense complex. The SERDP would help us to examine the feasibility and benefits of such an approach. The DOD situation is considerably more complex since it involves hundreds of major defense contractors instead of the small family of seven integrated contractors in the DOE.

We will also draw upon our recent experience with a similar waste reduction effort aimed at U.S. industry. The DOE Office of Conservation and Renewable Energy has sponsored the Industrial Waste Reduction Program (IWRP), a collaboration between Los Alamos/Sandia and U.S. industry. This program addresses some of the major challenges facing American industry—the amount of energy it uses, the wastes that it generates, the environmental requirements to which it must respond, and the realities of competing in world markets.

The IWRP will use the technical resources of DOE's national laboratories and the Nation's universities as important sources for the scientific and engineering ideas and expertise required to meet industry's needs for greater energy savings and reduced waste streams. The combined resources of industry, the universities, and the government will be brought together in teams to leverage their respective facilities, equipment and technical staff, and to tackle some of the more difficult waste management problems of industry. The IWRP collaborative technology R&D element will encompass process evaluation, process control, process change and material substitution. Candidate requirements from industry are currently being identified as are potential technology R&D projects aimed at industry's needs.

The SERDP initiative will allow us to use the experience from the Complex 21 waste minimization program and the IWRP to explore the utility of these approaches to the DOD defense complex waste problem.

V. RECOMMENDATIONS

The SERDP initiative provides great opportunity for the three weapons laboratories to leverage the Nation's investment in defense R&D to mitigate the environmental impact of the defense complex. We have presented a number of ideas from the three laboratories grouped into three major thrusts. We recommend that these ideas be integrated into the overall DOE plan for the SERDP initiative. Specific deliverables and budget recommendations must be developed during this next stage.

DRAFT

PROGRAM PLAN FOR THE STRATEGIC ENVIRONMENTAL RESEARCH AND DEVELOPMENT PROGRAM

SUBMITTED TO:

THE U.S. DEPARTMENT OF ENERGY

BY

LOS ALAMOS NATIONAL LABORATORY
LAWRENCE LIVERMORE NATIONAL LABORATORY
SANDIA NATIONAL LABORATORIES

JANUARY 1991

The Department of Energy's Strategic Environmental Research and Development Program

I. INTRODUCTION

At the request of the Department of Energy (DOE), the DOE's three weapons laboratories, Los Alamos, Lawrence Livermore, and Sandia National Laboratories, have prepared a joint proposal outlining their approach for the conduct of all activities mandated by the Strategic Environmental Research and Development Program (SERDP). The program was mandated by Chapter 172 of Title 10, United States Code. The legislation calls for research in three areas:

- *Environmental Data Gathering and Analysis.* The intent is to use archived data from defense sources, enhanced data collection technologies, and advanced computational and analytical capabilities to augment activities in the environmental research community, including global change and ozone depletion.

- *Environmental Compliance and Advanced Energy Technologies.* Emphasis should be placed on those technologies that could potentially be used directly by DoD. Research and development work in this area could be useful to assist DoD with compliance with future, more stringent environmental laws, such as the anticipated revisions of the Clean Air Act.

- *Technologies for Environmental Cleanup.* Research and development of new technologies, such as bioremediation, as well as methodologies for use in environmental restoration and cleanup activities, are of particular importance to both DoD and DOE.

The objective of this proposal is to provide a DOE approach to effectively apply the combined capabilities of its weapons laboratories to solve the national and Department of Defense (DoD) environmentally-related problems highlighted in the SERDP legislation. Created to design, test, and maintain the integrity of the nation's nuclear weapons arsenal, the weapons laboratories have consistently demonstrated the ability to assemble large multidisciplinary teams to solve operational and mission-oriented problems. Further, the laboratories have a long and productive history of working closely with the Department of Defense in both special weapons and conventional defense technologies. The laboratories possess extensive expertise, experience, and capabilities in each of the major targeted research areas. Additionally, each laboratory, as well as DOE as a whole, has had extensive interactions with industry and universities. Their technology transfer focus is now being enhanced by DOE and strong laboratory initiatives to work in parallel with industry in many areas. As national resources of this nation, it is most appropriate that the capabilities and resources of these institutions be marshalled in support of the national environmental problems which SERDP addresses.

Present technical staff at the three laboratories number approximately 17000, and include a broad spectrum of scientific and engineering disciplines. The present value of capital facilities exceeds $7 billion, and includes extensive supercomputer capabilities, special research facilities, and test facilities. The laboratories bring a problem-solving ethic that is based on fundamental scientific understanding and implemented through engineering practice. Forty years of experience in nuclear weapons research, design, development, testing, and engineering coupled with continuing responsibilities for production engineering, stockpile surveillance and stockpile retirement have instilled in the laboratories a cradle-to-grave approach for solving problems.

This proposal consists of two major parts. Part I - Program Plan (this document), consists of three sections: 1. Introduction; 2. Summary; and 3. Management Plan. Also included is an appendix that outlines in more detail the technical approach. In Part II, a Detailed Technical Proposal will provide the complete specification of scope and schedules and detailed cost estimates.

2. SUMMARY

SERDP RESEARCH AREAS

- ENVIRONMENTAL DATA GATHERING AND ANALYSIS
- ENVIRONMENTAL COMPLIANCE AND ADVANCED ENERGY
- TECHNOLOGIES FOR ENVIRONMENTAL CLEANUP

The laboratories have a background in working in the three areas outlined in the SERDP legislation and have developed a program that brings laboratory capabilities directly to the problems defined in this legislation. As the program evolves and further interactions develop with the cognizant DoD organizations and laboratories, the program and its priorities, objectives, and project selection criteria will be refined to more accurately reflect DoD needs. In a first year $60 million program, the laboratories propose to allocate $25 million to the area of Environmental Data Gathering and Analysis to carry out the technical objectives outlined below. For Environmental Compliance and Advanced Energy Technologies, the laboratories have allocated $15 million for the technical program defined later in this Section. Technologies for Environmental Cleanup are proposed to receive $20 million in the preliminary funding allocation to accomplish the technical objectives outlined in this section.

Environmental Data Gathering and Analysis

Problem. In recent years, evidence has mounted that human civilization may directly affect the climate of the planet Earth. Examples are the production of "greenhouse" gases such as Carbon Dioxide in the combustion of fossil fuels and the depletion of atmospheric ozone by man-made chloro-fluorocarbons. Clearly, the long-term security and prosperity of the U.S. depend strongly on understanding the technical issues underlying possible man-induced climatic changes and the ability to formulate clear policy decisions–in a global context–in the management of climate change. The best tools to provide this capability are comprehensive earth system models. Such models must be based on accurate and reliable measurements of pertinent atmospheric variables and a fundamental understanding of the relevant atmospheric processes, coupled thorough computer codes that exploit fully the computational power of present and next-generation supercomputers.

Deliverables. The ultimate goal of this project is to provide a verified capability for accurately projecting the consequences of human activities in the environment. The initial program will emphasize three tasks:

1. *Earth System Modeling and Advanced Computations*

   As a long range goal, the laboratories will develop an Earth Systems Model (ESM) that couples the stratosphere, ocean, and the land surface (including ecosystem behavior), permitting the simulation of the global climate and biogeochemical cycles of the atmosphere, marine, and land surface environments. During the initial phase of the project, the laboratories will:

a. improve existing atmospheric and oceanic models to treat global biochemical cycles of nitrogen, sulfur, and carbon,
b. develop a prototype global ecosystem model that represents the interplay of vegetation and hydrology on the land surface, and
c. convert existing climate system component models to high-performance (e.g., massively parallel) computers as building blocks for a full ESM.

2. *Utilization of Existing Data*

While a satisfactory earth systems model will undoubtedly require significant new satellite and ground-based data sets, there is also much additional information that we can extract from existing data sets. Our initial efforts will focus on:

a. *Improved utilization of existing satellite data*, especially from DoD and DOE sensors, e.g., the microwave data from the Defense Meteorological Support Program provides the most accurate measurement of the total water vapor content, a key parameter in understanding greenhouse warming and in unfolding other data. Additionally, our computational and modeling resources, in conjunction with existing high-resolution data, e.g., Advanced Very High Resolution Radiometer, will allow us to explore *regional* climatologies, thereby complementing and extending present community efforts, which focus on global climatologies.

b. *The use of advanced laboratory techniques to extract more information from existing atmospheric and geologic samples*: advanced techniques, such as accelerator mass spectrometry and gas mass spectrometry, with their increased sensitivity, will be used to reveal details about past climates and the role of oceans (from ice cores and ocean sediments), to narrow the uncertainty in our knowledge of carbon dioxide sinks (from carbon-14 uptake by soils), and to improve our knowledge of atmospheric circulation and chemistry (from oxygen 18 and cosmogenic tracers).

3. *Advanced Data Collection*

Ultimately, producing validated, reliable models will require additional environmental data sets that can be acquired only through the development and fielding of improved data collection technologies. Data sets are needed on the earth's radiation budget, cloud distribution, atmospheric properties, precipitation intensity, wind fields, sea surface state, and many other climatic variables. Within a five-year time frame, the laboratories will:

a. *Provide improved laser-based remote sensing instrumentation*, with an emphasis on field robustness, and minimal attendance operation, e.g., LIDAR (light detection and ranging) for high resolution, high accuracy profiling of key atmospheric constituents such as water vapor, ozone, aerosols, and clouds.

b. *Provide advanced instruments* for small satellites and aircraft platforms to obtain critically needed earth radiation budget data. These instruments include multispectral imagers, spectrometers, and radiometers. They will complement NASA EOS and DOE ARM and CHAMMP climate programs. Development and testing of these sensors will be accomplished by taking advantage of recently developed small satellite technology (DOE and DoD-sponsored), DoD booster (e.g., Pegasus) and launch facilities, and opportunities to fly on existing DoD aircraft platforms.

c. *Provide necessary ground support facilities* for the new climate monitoring instruments described in 3b. These include facilities for test and integration of the instruments onto the host platforms, calibration facilities (both laboratory and field), and ground data acquisition, processing and distribution over high speed (Gbit/sec) data communications links.

Environmental Compliance and Advanced Energy Technologies

The Problem: With an annual energy bill of $10 billion and consumption of 1.85 quads (1/3 billion barrels crude oil), the Department of Defense is the largest energy user in the federal government, accounting for 81% of federal energy consumption. Present DoD energy consumption is divided between facilities (30%) and operations (70%). Two important areas of concern result from the large amount of DoD energy consumption: energy security and environmental impact. Like the civilian sector, military facilities rely heavily on imported petroleum. Land-based vehicles rely exclusively on petroleum-derived fuels, as do many stationary diesel electric generators for electricity supply. Compliance with Clean Air Act requirements is required to reduce the environmental impact of DoD facilities. At the same time, reduction of energy consumption through improved energy efficiency and adoption of alternative technologies are required to reduce reliance on petroleum.

Many defense sites, including bases, munitions production facilities, repair facilities, etc. are not in compliance with present laws that govern the emissions of energy using and producing devices. Furthermore, it is reasonable to assume that, in the future, more and more stringent regulations will be developed, raising further the cost of compliance. Many energy technologies have been developed in the past two decades in DOE laboratories that can be applied to accelerate the rate of compliance at DoD sites.

Deliverables: The emphasis will be on repowering defense sites using clean and efficient domestic energy sources. A major objective of the near-term technology implementation efforts is to demonstrate the feasibility of making significant positive impact on DoD on-site energy use and environmental compliance by the early application of low-risk energy supply and utilization technologies now in development. During these initial stages, the laboratories will work with selected DoD sites to initiate load reduction and generation augmentation utilizing advanced technologies which will result in the reduction of both petroleum consumption and environmental impact. The focus will be on high-return, low risk paths to obtain operational experience in a variety of applications and conditions.

Where feasible, conventional stationary power supply systems that require replacement or augmentation will be identified and analyzed to ascertain power and reliability requirements, cost of energy generated and the best match to non-petroleum based technologies, including solar thermal, wind, photovoltaics, geothermal (including geopressure and hot dry rock), and alternative fuels. The use of alternative fuels must be closely evaluated because of the impact on logistics. As an example, a candidate site already identified by a cooperative DoD/DOE study effort is the naval facility at North San Clemente Island. Here, distribution voltage support is an issue and a DoD Office of Energy Policy consultant has begun discussions with base personnel on the use of photovoltaics to solve the problem. In addition, on-going collaborative efforts between several U.S. electric utilities and the DOE laboratories studying distribution line loading, anticipated load growth, site availability, economic feasibility, and resource evaluation, can be used as leverage.

Improved efficiency and conversion of DoD ground transportation systems (primarily diesel trucks and stationary diesel engines) to operate on alternative fuels is another low risk candidate, although the impact on logistics must be carefully evaluated. This program could leverage an improved efficiency diesel engine project being proposed by the Defense Advanced Research Project Agency (DARPA). Advanced intelligent control technology and novel exhaust after-treatment systems will be implemented to enable clean highly efficient engines to be employed. Some of these technologies are now being developed in ongoing joint DOE/DoD/industry supported R&D programs. These initiatives would be closely coordinated with U.S. engine manufacturers through technology alliances described in the Management Plan.

Through efforts such as these, the DoD facilities can become highly efficient use centers exceeding compliance with environmental standards while using substantially more domestically derived energy.

Technologies for Environmental Cleanup

The Problem. Environmental cleanup at many defense sites is necessary in order to establish compliance with applicable Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and other laws. It is a massive national problem. Even though both DoD and DOE have large programs to solve this problem, more work developing more effective methods is needed. The problems at defense sites include cleanup and disposal of both conventional and CBW munitions, propellants, mixed hazardous and radioactive waste, and groundwater and soil contamination from fuels, propellants, solvents and metals. Bringing underground contaminants to the surface for treatment is often difficult, excessively expensive, or ineffective. To date, most attempts at *in situ* treatment or destruction of underground contaminants have been unpredictable or ineffective because the relevant subsurface processes and their interactions were not properly understood or utilized.

Deliverables. The laboratories propose to develop solutions to these problems through an integrated program involving development of risk-based decision management tools, technologies which minimize the generation of waste (*waste minimization*), technologies for treatment of hazardous and mixed waste (*waste treatment*), advanced technologies for cleanup of soil and groundwater (*environmental cleanup*), and cross-cutting instrumental measurement methodologies (*instrumentation*) useable for waste minimization, waste treatment and environmental cleanup. We will take advantage of and leverage current programs in the DOE and the DoD with no duplication of effort. These technologies will be validated through demonstrations at selected defense sites.

The initial five-year effort includes an interdisciplinary program in *waste minimization* designed to eliminate or drastically reduce wastes such as organic compounds, solvents, ozone-depleting materials, and heavy metals. Our *waste treatment* program will result in methods for treating hazardous organic and inorganic wastes (and mixed wastes) by a combination of available or developing methods, thereby reducing the concentration or volume that needs to be disposed. The objective of our *environmental cleanup* program is to develop and demonstrate new technologies and engineering tools to deal with localized, relatively deep subsurface contamination problems, particularly organic pollutants. Finally, the *instrumentation* program seeks to develop new instrumental methods for real-time, remote, long-term monitoring and on-site chemical analysis, leakage detection, plume extent, and site characterization.

As an example of a waste treatment program microbial and plant cell technologies have been developed for treating explosively contaminated water (pink water). The Indian head Naval Ordnance Works discharges liquid wastes from the manufacture of torpedos and other ordinance. These waste streams are difficult to treat, are expensive to dispose of, and are appropriate for biotechnology treatment. Bioreactors could be designed for the digestion of waste by bacteria specifically cultured for the waste stream. Instrumentation would be developed for monitoring of the process and any airborne of liquid effluents. On-going biotechnology programs at two of the laboratories could be leveraged to provide appropriate treatment. As another example, supercritical water oxidation, currently being developed at two laboratories could be used for propellant disposal and organically contaminated liquid treatment. These problems exist at many DoD facilities including the Pueblo Army Depot, Picatinny and Badger Ordnance Works, Tinker and Hill Air Force Bases. Cover technologies, already being transferred to the Air Force at Hill Air Force Base, could be expanded to other facilities.

Finally, one proposal is to develop a prototype system called CARDS (Characterization and Remediation at DoD Sites), to remediate hazardous waste at DoD sites. This system will be comprised of elements for site characterization, location and removal of wastes using intelligent remote technologies, processing technologies to convert the wastes to non-hazardous forms, and repackaging technologies to allow later treatment or storage as necessary. Site characterization will be based on *in situ* measurement of the waste sites, and will employ risk and cost benefit analyses to ensure that remediation is cost effective. Technologies for waste removal will employ intelligent, remote systems to ensure safety and economy. Treatment technologies to eliminate the waste will be based on existing methodologies as well as the development and application of promising new technologies such as solar detoxification.

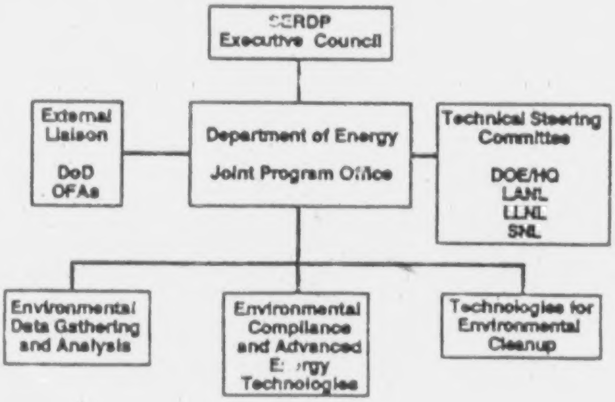
3. MANAGEMENT PLAN

The laboratories will manage activities conducted under the SERDP using an approach patterned after the Memorandum of Understanding that exists between the DoD and the DOE for research in nonnuclear military technology. This MOU–in force for more than five years–serves as a successful paradigm to manage large, joint DOE-DoD programs.

Organization. The proposed management structure is illustrated in the following figure. A Joint Program Office (JPO) will be established within the DOE. The JPO will report to the SERDP Executive Director to provide programmatic oversight for activities conducted within the laboratories. Administrative oversight will be provided by the DOE. Initially the JPO will include representatives from SERDP, DOE, Los Alamos, Livermore, and Sandia; it could be expanded as the needs evolve.

A Technical Steering Committee will be formed to provide guidance on technical and programmatic matters. It will be comprised of representatives from the laboratories, DOE, DoD, and industry.

The JPO's program management and control system (PMCS) will provide the structure necessary to integrate and control the work to be performed as well as the budgets, costs, schedules, and technical performance. The objective of the PMCS is to ensure completion of SERDP technical objectives within cost and schedule baselines; the PMCS will be documented in a Program Plan System.


SERDP
Executive Council
External
Liaison
DoD
OFAs
Department of Energy
Joint Program Office
Technical Steering
Committee
DOE/HQ
LANL
LLNL
SNL
Environmental
Data Gathering
and Analysis
Environmental
Compliance
and Advanced
Energy
Technologies
Technologies for
Environmental
Cleanup

Systems Studies and Policy Analysis. Optimal expenditure of SERDP funds by the JPO, i.e., funding those endeavors that will result in the largest benefits, requires objective analytical tools to select projects and to analyze their probable effects. Estimation of probable effects is not simple because SERDP projects address all three research areas and therefore can affect several different systems. Examples include the following: understanding of the dynamics of global climate change; energy-economy interactions, which can range in scope from the global or national scale down to the individual service scale; and weapons-related pollution problems. The data requirements and models will, of course, vary for the specific research areas. Existing models and tools will be adapted where possible.

A framework of tools for systems studies and policy analysis will be developed and applied to assist with optimal project selection and evaluation under the SERDP program. The framework will include the following components: *information management* and expert systems, such as distributed databases of environmental data; *decision analysis*, development of a framework to prioritize and select components of the SERDP program; *exposure assessment*, development of credible methods to quantify exposure and dose for all agents of concern in SERDP; *risk analysis*, the estimation of health risks resulting from energy and environmental alternatives resulting from SERDP; *systems analysis and simulation*, application of advanced simulation technology to evaluate process- and technology-alternative tradeoffs and system design and scheduling; and *benefit-cost analysis*, estimation of the costs of SERDP technologies or processes, the market to which they can be applied, and quantification of the health and financial benefits afforded by the technologies or processes. *Interviews* with private industry will also be conducted to identify market opportunities and to assist with technology transfer.

Cooperative Work. A central thrust of the JPO will be cooperative work. The laboratories have ongoing projects in the three research areas. As a result there will be many opportunities to leverage resources. These opportunities include, among others, computer capabilities, extensive application of existing and developing diagnostics and interpretation methods, analysis of underutilized data sets, particularly those not in the public domain, development and assessment of alternate energy systems, development of integrated, proven methods for process optimization, waste control, and site remediation. In many cases, the approach is to develop the technology through the prototype phase, with strong input from the user community, followed by the transfer to the user community. The laboratories continue to work closely with U. S. industry in the commercialization of technologies developed in their programs. Working relationships have been established with a large number of Army, Navy, Air Force, and Coast Guard operations and facility managers. Many joint programs have been developed.

In the Environmental Data Gathering and Analysis area, activities will be modeled on past successful multiagency programs which include satellite and aircraft remote sensing collaborations with the D[illegible] to carry out monitoring and treaty verification missions and collaborations with NASA, EPA, and industry to perform Atmospheric Studies in Complex Terrain (ASCOT). Livermore and Los Alamos are part of a University of California system-wide project promoting graduate and postdoctoral participation in global modeling. Livermore's DOE-sponsored Program for Climate Model Diagnosis and Intercomparison brings together representatives of twenty research groups to analyze model performance. The laboratories are active participants in DOE'S CHAMMP (Computer Hardware, Advanced Mathematics, and Model Physics) program, and all have pioneering programs for application of massively parallel computers through initiation of developmental collaborations with hardware vendors. The DoD DMSP system offers untapped potential for model verification, and new satellites can further expand data sets needed to improve our understanding of global climate.

Joint projects will be developed with counterpart activities in the DoD in the Environmental Compliance and Advanced Energy Technologies area such as the Tri-Service Panel on Photovoltaics, the Interagency Power Generation Group, and the U. S. Army Tank-Automotive Command. Strong cooperation with the

Army's Engine Research Center at the University of Wisconsin, the Army Fuels and Lubricants Laboratory at Southwest Research Institute, and the DARPA Advanced Engine Program is planned.

In Technologies for Environmental Cleanup, much of the current work at the laboratories is funded by various DOE offices in such areas as environmental restoration and waste management, civilian radioactive waste management, conservation and renewable energy, fossil and geothermal energy extraction, health and environmental research and basic energy sciences. The SERDP-funded research would benefit from those activities, but would be directed primarily at developing technology for DoD sites. Many current connections exist with DoD sites and their environmental cleanup problems. Examples include the biodegradation of explosives and supercritical water oxidation of organics supported by the U. S. Army Corps of Engineers and the U. S. Air Force Engineering and Services Center, respectively. Many more connections would be developed during the course of this program for other emerging technologies which show much promise. The Industrial Waste Reduction Program, a DOE/Conservation and Renewable Office initiative under development by Sandia and Los Alamos as initial Laboratory participants, will provide leverage for the DoD because it supports specific waste reduction technologies in a co-development mode with U. S. industry. The academic and industrial collaborations in this area are too numerous to list. These will form the basis for expanded technology transfer. One other use of existing resources in a cooperative manner is the use of supercomputers by industry. The computers are now accessed by industry when work is ongoing under a contract to a federal agency, DoD contractors participating in SERDP would have access to these extensive resources.

Technology Transfer. The DOE has both the resources and the charter to lead the way in establishing technology alliances between U. S. industry and the DOE laboratories to ensure a clean environment through planned development and expedient deployment of environmental technologies. Success will rely on forming technology alliances with U.S. industry and universities to effect solutions to our environmental problems now by leveraging current research and development on the cleanup of the DOE complex. The laboratories will seek industrial partners for the technologies developed and deployed. By way of these cooperative R&D technology alliances the needs of both the public and private sectors are met.

Successful technology alliances require extraordinary cooperation among technology developers, the private sector, and public policy makers. They also require that cooperative agreements be developed at the beginning of the projects. Many agreements already exist between industry and the DOE and its laboratories. These are in the form of Work for Others (WFO), Cooperative Research and Development Agreements (CRADA), and other nonCRADA cost-shared collaborative projects. Shared risk, shared cost, identified market needs, key technologies and rapid deployment are the key factors to success that will ultimately provide a cleaner environment and enhanced U.S. economic competitiveness. New to the DOE system, the CRADA will be the cornerstone in deployment of technologies related to environmental restoration, waste minimization, and others. Other ways for the private sector and other federal agencies to access the Laboratories' national resources are User Facilities, personnel exchanges, workshops and individual staff consulting. A strong interface between U. S. industry and the laboratories in the areas of supercomputers will be a main focus with SERDP.

Technology transfer is structured to occur in a bilateral fashion thereby providing the leveraging of national resources in both technology development and deployment. Successful partnerships between the private sector and the laboratories have confirmed three essential principles: (1) early involvement by the industry, (2) continued participation throughout the research cycle, and (3) cost-sharing as a commitment to eventual use of the technology. These principles will be adhered to and structured so as to maximize the interaction with the DoD, other federal agencies, and the private sector.

The Department has experience in forming programs which have served as technology alliance models:

Superconductivity Pilot Centers. The Pilot Centers were established by the DOE at Los Alamos, Argonne, and Oak Ridge National Laboratories in September 1988 to expedite the commercialization of high-temperature superconductivity through cooperative R&D between the laboratories and U.S. industry. The Pilot Centers pioneered the concept of cost-shared R&D within the DOE. Within the framework of the Pilot Centers concept are innovative features that provide means for the DOE to respond to industry needs with greater expediency, flexibility, and simplicity. These features include a driving focus on helping industry, a multidisciplinary focus on generic, enabling technologies, a cost shared funding structure, streamlined contracting, and access to intellectual property rights. Within two years the three centers forged 43 agreements with 36 different companies. These successes ranged from small startup companies to a major collaboration between DuPont, Hewlett-Packard, and Los Alamos that involved $13 million over three years. Scientific and technical progress has been excellent, pioneering new methods in synthesis, processing, and characterization of superconductors.

The Oil Recovery Technology Partnership (ORTP). In 1988 the DOE initiated an experiment to promote collaboration between the oil industry and two of its laboratories, Los Alamos and Sandia National Laboratories. Within the Partnership new, innovative mechanisms for interactions with industry, using industry guidance to ensure that the needs of the oil industry are met, are enabling the transfer of technologies derived from DOE-funded weapons and energy research and are making expertise, equipment, and facilities at the laboratories available to the oil industry.

Even before its first anniversary, the ORTP engaged in two successful field experiments using sophisticated reservoir characterization and modeling techniques developed at the laboratories. The experiments could lead to the effective recovery of some 10 million barrels of domestic oil.

The Petroleum Geochemistry Consortium. Since 1988, the DOE, Lawrence Livermore National Laboratory and twelve oil companies have been collaborating in the development of experimental methods, computer models, and analytical tools that will assist in locating oil deposits and predict the size and quality of such deposits trapped in geologic formations. Each of the individual sponsors has unlimited rights in all data, software and inventions developed under the project, influence the direction of the research, and have ready access to LLNL researchers. Funding of the project is roughly equally divided between Government and the private sector. The tools developed thus far are already in use by industry to aid in oil exploration.

The DOE/Industry/LLNL Superplastic Steel Initiative. The project, initiated in 1988, links DOE, LLNL, and three industrial participants (Caterpillar, North Star Steel, Ladish Co., Inc.,) and Stanford University, in an effort to seek the commercialization of superplastic steel. This fine-grain steel offers the potential to greatly reduce the cost of machining and joining in U. S. industry and to provide superior performance in certain applications. Project funding of approximately five million dollars is roughly divided one-third industry and two-thirds government. When successful, the government investment will be entirely recovered directly through royalty sharing.

Funding Process. The DOE advises using a block funding approach identical to that used in the nonnuclear military technology program. To facilitate this, an MOU patterned after the one for that program will be implemented.

The following shows the funding requirements in millions:

FY91	FY92	FY93	FY 94	FY95
60	100	200	300	400

APPENDIX A
TECHNICAL APPROACH

We have identified several programs for each of the three research areas. The description of these programs, given below, includes the nature of the problems to be addressed and the approach to be taken by the Laboratories.

A. ENVIRONMENTAL DATA GATHERING AND ANALYSIS

ENVIRONMENTAL DATA GATHERING AND ANALYSIS
Three Programs

- UTILIZATION OF EXISTING DATA
- ENHANCED DATA COLLECTION TECHNOLOGIES
- ENHANCED MODELING AND ANALYSIS

The laboratories consider this research area to be comprised of three programs: (1) Utilization of Existing Data; (2) Enhanced Data Collection Technologies, and (3) Enhanced Modeling and Analysis.

Utilization of Existing Data. The most informed basis for addressing complex environmental issues such as the greenhouse effect and environmental restoration, and model verification, relies on data on past and present conditions. For different reasons, the DOE, DoD, and others have made extensive measurements at the surface, in the atmosphere, and from space. Application of advanced data base management capabilities and examination of these data with new analysis techniques will yield large rewards. Analyzing existing data is relatively inexpensive and offers the potential for studying long-term trends. Documentation, calibration, and retrieval may be the main hurdles.

1. Local, Regional and Global Climate. The laboratories will locate relevant data, verify its suitability, and then use their resources to develop a better understanding of local, regional, and global climate phenomena and models. One major effort will be to use highly-sensitive, advanced laboratory instrumentation to extract more information from geological and atmospheric samples to reveal details about past climatic behavior, glacial history, aquifer recharge, biogeochemical cycles, and atmospheric circulation and chemistry. Applicable analytical techniques include gas mass spectrometry, accelerator mass spectrometry, electron microscopy, and proton-induced x-ray emission. The resultant data bases can cover long periods (for example, 25 years in the case of tropospheric particle samples from the High Altitude Sampling Program). These data sets are essential to better verify climate models, and to improve understanding of climatic history.

2. Use of Limited-Access Data. Another major effort will be to explore the utility of limited-access data, including visible and infrared data from the Defense Meteorological Support Program satellites, the DOE-designed optical sensors on the growing network of Global Positioning Satellites (which will provide whole-earth coverage) and other nonmeteorological sensors. The laboratories have the ability to distill unclassified, pertinent data sets from classified DOE and DoD information and to provide scientific quality assurance. An effort to make these data available to the environmental community will be launched through mutual communication and education.

3. *Use of Readily Accessible Data.* The laboratories will use their computational and modeling resources to more fully use the readily accessible data. Whereas current efforts are focusing on global climate studies at 50- to 250-km resolution we will use National Oceanographic and Atmospheric Administration Advanced Very High Resolution Radiometer data to develop high-resolution (1-to 4-km) regional climate data base and sets to identify and depict climatic anomaly patterns and distributions. We will use state-of-the-art computer codes to interpret results from sensor systems.

Enhanced Data Collection Technologies. The enhanced data collection technology effort will address a wide range of environmental issues, ranging from the effects of carbon dioxide and other energy-related emissions on the environment to the impact of the potential accidental release of hazardous materials on the environment and on public health. In the area of global warming, the US Global Change Research Program has established clear priorities that emphasize such areas as uncertainties in cloud and water vapor feedback and its effect on the earth's radiation budget. Existing gaps in the ability to determine that budget and to acquire high-vertical-resolution measurements of such key climate variables as water vapor, aerosols, winds, and temperature must be addressed. Although a good capability for mapping the changing concentrations of ozone is evolving, we must extend studies of relevant atmospheric transport and chemistry that inhibit confident predictions of future ozone levels and the effects of CFC substitutes. At the regional and local level, we must improve remote sensing and in situ techniques for identifying and tracking accidental releases of toxic and hazardous materials and for monitoring urban air quality. Both emergency response and sustained environmental monitoring are required

The DOE, in collaboration with the DoD, will contribute to meeting these needs by pursuing the following:

1. *Improved Instrumentation.*
2. *Special Measurement Platforms.*
3. *Centralized Calibration Facility*

Improvement of instrumentation will include development of the next generation of laser-based, remote sensing technologies with emphasis on field robustness, minimal-attendance operation, user friendliness, exploration of miniaturization techniques, and extension of the use of lasers to space platforms. We will complement this effort by expanding our current R&D on in situ sensors, such as chemically specific microsensors and direct spectroscopic techniques, for local airborne and waterborne toxic detection. The laboratories offer capabilities in the area of special measurement platforms. As major developers and integrators of satellite instrumentation, the laboratories can work with NASA, NOAA, and the DoD to design and launch small climate satellites that would complement the Earth Observing System program in such areas as providing interim measurements of the earth's radiation budget and the motion and content of clouds. Existing airborne platforms such as aircraft and smart balloons, with upgrades where required, can take measurements ranging from cloud studies to experiments requiring atmospheric chemistry and monitoring. These platforms will be available to other users and agencies. In addition the laboratories will establish a centralized facility for instrument setup, calibration, and support for integration of instruments into the host platform.

Enhanced Modeling and Analysis. Effective evaluation and prediction of human-environmental interactions require advanced analytical methods to interpret existing data bases and guide the collection of new data. The analyses will involve models that represent multiple physical, chemical, and biological interactions that couple the atmosphere, ocean, and terrestrial environmental systems on scales that vary from local to global. The defense community has collected a variety of valuable data on the oceans, sea ice, atmosphere, hydrologic and vegetative systems and other domains that, through proper integration, can contribute to our understanding of the natural and man-perturbed environment. Application of high performance computing technologies focused in the DOE laboratories will permit development of new models that provide the required integration to enhance our understanding of the atmosphere, hydrosphere, biosphere, cryosphere, and geosphere.

The laboratories propose to expand existing collaborations with other organizations within and outside the government to identify needs and opportunities, develop the models, and provide access to the advanced computing capabilities to run the models and interpret results, with emphasis on the following:

1. Model Development and Coupling. Using the laboratories' expertise in geophysical and chemical modeling, this effort will combine advanced atmospheric, chemical, ocean, and ecosystem models into preliminary earth system models, applicable to relevant environmental problems. Advanced numerical methods, including adaptive and nested meshes, multigrid, and slow manifold methods will be investigated as possible means of optimizing resolution and computational speed. Data on chemical constituents and tracers moving between system components will provide verification tests.

2. High-Performance Computing. Comprehensive models will require optimal use of the newest computing systems, including especially massively parallel computing systems. Optimal performance requires new software for operations, data storage and analysis, and numerical techniques well suited to the new computer architectures. Multiple machines may also be linked by ultra high speed communication links to achieve additional computing power (e. g., linking regional and global scale models).

B. ENVIRONMENTAL COMPLIANCE AND ADVANCED ENERGY TECHNOLOGIES

ENVIRONMENTAL COMPLIANCE AND ADVANCED ENERGY TECHNOLOGIES
Two Programs

- ENERGY PRODUCTION AND STORAGE AT DEFENSE SITES
- ENERGY UTILIZATION IMPROVEMENTS

The total annual energy cost for the DoD is approximately $10 billion and represents over 81% of the total energy purchased by the federal government (1.65 quads in 1989). Of the DoD's energy consumption, 70% is used for operational functions and 30% is used for facilities. The DoD has over 500 major installations worldwide. These installations encompass [illegible]00,000 buildings with over 2.4 billion square feet of space. Operations at defense sites worldwide depend heavily on energy use in both mobile and stationary modes. Nonaviation mobile power sources consume both gasoline and diesel fuel in internal combustion engines, whereas stationary power requirements are met by electricity and by direct use of liquid and gaseous fuels.Other than this direct use of energy, significant energy consumption is represented by the development and production of nuclear and conventional weapons and military supplies by the defense industry and by the conduct of other national security programs.

Currently, about 75% of the energy consumed by the DoD is derived from prime petroleum sources (oil and natural gas). This results in two important areas of concern. The first is energy security, as exemplified by recurring fluctuations in world petroleum supply and cost. The second is environmental impact at a time when the federal government is mandating leadership by all of its departments and agencies in countering major environmental threats facing the nation and the world.

The laboratories will focus research in two programs: (1) Energy Production and Storage at Defense Sites, and (2) Energy Utilization Improvements.

Energy Production and Storage at Defense Sites. The laboratories will help the DoD and DOE meet their obligations of lowered environmental emissions and hazardous waste generation in energy supply and storage and will improve independence from external energy sources. In the short term, the program will address identification, evaluation, and fielding of emerging environmentally sound and economical energy technologies for defense sites, military operations, and weapon manufacturing in a broad range of locations, climate conditions, air quality conditions, and project types and sizes.

The work will emphasize the application of the renewable energy technologies (wind, photovoltaics, solar thermal, geothermal, and biomass) and other approaches such as electric- and natural-gas-powered vehicles, advanced storage batteries, methane and hydrogen generation and storage, and fuel cells. The program strategy requires an integrated effort among DOE laboratories, US industry, and DoD laboratories to focus on the development of a solid base of experience and sources of proven domestic industrial products in applicable technologies. In the longer range, the program will be a model for similar applications in other government, industrial, commercial sectors, and the international market.

As an example of a prime near-term opportunity, the military uses thousands of diesel engine generators to supply electricity to small, isolated loads. These loads are typically highly variable and are frequently located in areas where fuel supply is difficult and maintenance problems are exacerbated. Examples include island power, range instrumentation, and isolated base facilities. The difficulty of fuel supply increases the likelihood of fuel spills, fire hazards, and improper hazardous waste disposal. The difficulty of maintenance and load variability results in inefficient and unreliable operation and increases the local atmospheric pollution caused by these units. Hybrid generation systems using selected renewable energy sources (wind, photovoltaics, solar thermal, and fuel cells) in conjunction with energy storage can displace 85 to 90% of the diesel fuel used for these purposes. An immediate spin-off market for similar hybrid power systems exists in developing countries.

Energy Utilization Improvements. One focus of the laboratories' approach is a cooperative program among the DOE defense program laboratories, DoD facilities, industry, and universities to implement clean energy systems at DoD facilities. Such energy systems will be based on domestically derived fuels. Another focus is the adaptation of past and ongoing DOE laboratory technology programs aimed at reducing energy use by all sectors–buildings, industrial processes, transportation, and energy production itself. A number of innovations have been made in building conservation technologies that lower heating, cooling, and lighting needs. Similar advances have been made in transportation technologies, including higher- performance engines and engines that can now efficiently burn alternative (not petroleum-derived) fuels. Yet another focus will be the establishment of DoD bases as models of highly efficient energy use centers exceeding compliance with the Clean Air Act standards while using domestically derived fuel resources.

Central to improved energy use is the application of advanced, intelligently controlled systems to simultaneously optimize efficiency and meet stringent emission constraints. That technology will be implemented to enable clean, highly efficient diesel engines, burning either natural gas or domestically derived methanol, to be used in heavy-duty truck engines and stationary diesel electric generators. Likewise, the same domestically derived fuels will be incorporated into advanced-technology, intelligently controlled burner systems to meet the thermal energy requirements of various facilities with very high fuel-use efficiencies and greatly reduced environmental impacts, particularly those involving combustion pollutant emissions.

As an example of a near-term opportunity, large, stationary diesel engines currently consuming diesel oil can be converted to operate on natural gas and/or methanol using advanced fuel injection and combustion systems technology presently under development in cooperative weapons laboratory-industry programs. Development and use of hardware and software components of intelligent control systems and implementation of novel exhaust after-treatment systems will be included. The goal will be simultaneous improvement in engine efficiency and greatly reduced atmospheric emissions of smoke and oxides of nitrogen.

C. TECHNOLOGIES FOR ENVIRONMENTAL CLEANUP

TECHNOLOGIES FOR ENVIRONMENTAL CLEANUP
Four Programs

- **WASTE MINIMIZATION**
- **WASTE TREATMENT**
- **SITE REMEDIATION**
  - — **Remediation Technologies**
  - — **Site Characterization**
  - — **Assessment and Interpretation**
- **INSTRUMENTATION**

Four programs would be established within this research area: (1) waste minimization; (2) waste treatment and disposal; (3) remediation strategies; and (4) instrumentation. The most efficient and effective way to handle waste is to generate the minimum possible by operating in a structured *waste minimization* approach. This reduces the complex problems often associated with determining the character and behavior of waste, the nature of the interaction with the environment, and the means of isolation best suited for ensuring environmental purity. When waste generation cannot be avoided, the next best step is to alter the waste so that it is less hazardous, decomposes at a prescribed rate, or is in some way made less harmful to the environment; in other words a *waste treatment and disposal* approach. Another challenge for environmental management involves applying knowledge about transformation, transport, probable geological accumulation points, residence times, and biological activity to devise practical *site remediation strategies*. Lastly, there is a need for advanced *instrumentation* for measurement and monitoring during waste minimization and treatment activities, site characterization, and application of cleanup methods.

Waste Minimization. Many processes used in the manufacture of weapon and defense components lead to the generation of waste products and the concomitant use of energy to collect, transport, and dispose of these wastes. Similar waste streams are generated in the repair and reworking of defense-related equipment, especially at DoD maintenance and repair facilities. The overall objective of this program is to develop alternative, environmentally acceptable manufacturing processes and to utilize advanced systems analyses to eliminate or reduce drastically the generation of hazardous waste. This activity will include cleaning, coating, joining, packaging, and closed-loop (zero-effluent) manufacturing processes. In addition, efforts involving the development of chemical sensors and automated analyzers will be used to deploy process control systems for waste minimization and cleanup at DoD facilities.

The laboratories will focus on research, development, demonstration, testing, and evaluation of a number of techniques and processes for the minimization of wastes. This effort will include advanced technologies for metals, polymers, lead-free ceramics and glasses, electronic assemblies, benign propellants and energetic compounds; electroplating; and the use of novel (such as diamond-like carbon) films. Specific targets for elimination are volatile organic compounds, ozone-depleting chemicals, and heavy metals. New processing technologies will be compatible with other technologies in a total manufacturing process. Chemical and mechanical models will be developed for predicting reliability and aging characteristics of assemblies manufactured using these new technologies. Supercritical carbon dioxide or other benign solvents will be used for polymer processing and will have significant environmental and energy conservation benefits. Plasma-based mitigation and plant-cell-based concentration of metal ions are additional technologies that will be evaluated.

The proposed work involves extension of current work at the laboratories. The office of the Assistant Secretary for Defense Programs and the office of Environmental Restoration and Waste Management of the DOE, the national laboratories and the nuclear weapons complex are establishing a technical program to implement waste minimization within the complex. This activity is also a major part of the DOE complex modernization program. Waste stream managers have been identified and are collaborating to develop advanced process and fabrication capabilities. An important part that the laboratories can play involves multidisciplinary efforts that use advanced physics, chemistry, materials science, and computational expertise. Many technologies exist within the laboratories that, with moderate additional development, could become zero-effluent processes. Representative technologies are net-shape powder processing; electrostatic powder coating; reactive deposition processes such as chemical vapor deposition; radio frequency and catalytically-assisted deposition; investment casting (metals); injection molding (polymers); and sol-gel processing (ceramics).

Waste Treatment and Disposal. All DoD and DOE facilities are subject to stringent legislative requirements (specified in the RCRA, CERCLA, and others) that govern waste treatment and disposal methods. Rapid changes in this area coupled with growing public concern about hazardous wastes render many current waste treatment technologies inadequate or undesirable. Most DoD and DOE facilities store wastes because treatment technologies are inadequate or nonexistent. New capabilities are urgently needed for the treatment of both hazardous and mixed wastes produced by both the DOE and the DoD. These new technologies and facilities must comply with all existing and expected regulatory requirements.

The underlying technologies for a sound development program in waste treatment methods already exist at the laboratories. Some have already been formalized and focused on DOE problems; others are at varying stages of development. The advantages and disadvantages of each process must be evaluated for a particular waste type and integrated with ongoing efforts to minimize waste. This is important because the waste minimization program could change or even eliminate a particular waste type.

Two major thrusts integrate either development programs or base technologies that currently exist at the Laboratories.

1. *Hazardous and Mixed Organic Waste.* The treatment of hazardous organic waste (or the hazardous organic component of mixed wastes) is addressed by a variety of thermal and oxidative destruction processes including supercritical water oxidation, catalytically stabilized incineration, molten salt pyrolysis/oxidation, catalytic electrochemical oxidation, electron beam and cold plasma destruction, photocatalytic detoxification, microwave-promoted destruction, wet plasma oxidation, ultraviolet destruction with ozone and hydrogen peroxide, catalyzed wet oxidation, and superheated steam reforming. Biotechnology for the degradation of explosives, solvents, and hydrocarbons is also under development.

2. *Hazardous and Mixed Inorganic Waste.* The treatment of wastes containing toxic and radioactive metals is addressed through a variety of technologies: separation of paramagnetic waste components by high-gradient magnetic separation, catalytic electrochemical dissolution, dissolution or decontamination with soluble synthetic or natural chelators, selective extraction with polymer-bound complexing agents and membrane systems, extraction with complexing agents dissolved in supercritical carbon dioxide, and sol-gel type processing for separation of actinide metals from waste oils. Biotechnology as a waste treatment method is also being developed. For example, plant cells, siderophores, and other natural chelators are under study for the removal of toxic and radioactive metals from waste streams.

Supporting technologies will be needed to implement these waste treatment processes. Many of these supporting technologies (such as automated process control, sensors, and robotics) are under development. The waste treatment processes developed must not result in additional environmental contamination through the production and discharge of fugitive radioactive species such as gaseous molecules, aerosols, and particulates. Supporting scientific studies on the formation, identification, and recapture of such fugitive radioactive species will be conducted and incorporated into the base process.

Site Remediation Strategies. The regulatory climate in the U. S. holds the current and prior owners and operators of any facility liable for the release in any manner into the environment of any hazardous substance or pollutant. Under the provisions of the Comprehensive Environmental Response, Compensation and Liability Act, past practices that caused or have the potential to cause harm to public health or the environment must be remedied. Given this broad definition, all DoD and DOE facilities that have caused soil or water contamination as the result of landfills, underground tank leakage, spills, or other intentional or accidental acts may require expensive and time-consuming site remediation. This is particularly important to those DoD or DOE facilities that will be decommissioned and returned to private or public use. Current technology for site remediation is inadequate. There is a pressing need for more rapid, less expensive, and far more effective technologies than presently exist.

1. *Remediation Technologies.* We have several ongoing or proposed activities addressing specific technologies relevant to on-site or *in situ* remediation. Both interim and long-term solutions are being addressed. At many sites, solutions require multiple technologies to arrive at long-term restoration. Development of successful remediation methods involve seven activities: (1) Potential demonstration and remediation sites must be chosen and characterized, and regulatory issues must be addressed; (2) A systematic exploration of relevant environmental remediation technologies in use or under development is required; (3) If existing methods are not sufficient, new approaches must be investigated; (4) Scale-up problems in going from laboratory to field operations or applications must be resolved by demonstration studies; (5) The effectiveness of applied technologies must continually be assessed and models and expert systems must be developed; (6) Operational experience and proof that the technology functions properly may be provided by field tests; (7) Performance monitoring will be required during all phases, including after site closure.

The following thrusts for technology development are proposed:

1. *Oxidative Destruction Methods for Organics;*
2. *Methods for Extraction, Mobilization, and Stabilization of Metals;*
3. *Electrochemical Methods for In Situ Remediation;*
4. *Bioremediation of Explosives, Propellants, and CBW Agents;*
5. *In Situ Microbial Cleanup of Organic Chemical Wastes;*
6. *Biological Treatment of Effluents Contaminated with Chemical Wastes;*
7. *In Situ Barrier Technologies for Containing Subsurface Contaminants;*
8. *Enhanced Engineering Approaches (such as in situ soil vapor stripping and heap leaching);*

9. *Advanced Engineering Technologies (such as steerable drilling, inexpensive production drilling, operator-encapsulated/shielded equipment, robotics, minimization of secondary decontamination, and remediation technology emplacement methods);*
10. *Testing and Demonstration of Remediation Technologies at Intermediate and Field Scales;*
11. *Gas Treatment Technologies; and*
12. *Contaminant Transport and Fate Simulation for Process Performance and Design Applications.*

2. *Site Characterization.* Over the next several decades, the nation is faced with the enormously expensive technical challenge of characterizing, assessing, and cleaning up subsurface contamination at sites throughout the defense complex. The current practice of groundwater remediation frequently does not take advantage of current scientific knowledge of subsurface systems and processes. This latter problem is particularly acute in characterization and assessment activities that do not take full advantage of either the site investigation experience of the past decade or the current stochastic approaches to geohydrological processes. A further problem is that remediation activities sometimes ignore subsurface sorption and transport processes that can render pump-and-treat cleanup methods ineffective.

The laboratories' capabilities to devise and test integrated methods for detecting and measuring subsurface contamination problems, to monitor contaminant transport and fate, and to simulate, evaluate, and extrapolate the effects of cleanup alternatives will be critical to sophisticated site characterization. Development of this area will be based on innovative sensor technologies developed in the instrumentation part of the program and on new methods for remote and *in situ* characterization, informed stochastic approaches for sampling and analysis, improved methods for laboratory examination of samples and experimental systems, and sound understanding and numerical simulation of subsurface processes. Site characterization supports site remediation and policy analysis and strategy formulation by providing quantified information about initial and limiting conditions, active processes, and anticipated trends for laboratory and field-scale assessments and remediation.

Existing noninvasive technologies for electromagnetic and seismic surveying will be integrated with improved ground-penetrating radar and then coupled to advanced data combination and computer imaging to provide clear, three-dimensional subsurface images in real time. Isotopically labeled tracers, in conjunction with extraordinarily sensitive chemical analysis, will be developed to map complex heterogeneous subsurface pathways and measure contaminant migration times. Where invasive measurements are required, faster, cheaper, and less disturbing drilling will be developed, and end-of-drill pipe sensors will be used for *in situ* measurements. Chemical speciation and reactivity studies will address the complex effects of valence state, complexation, and soil-contaminant models developed in the analysis and interpretation portion of this program. These models will be validated at a particular site chosen for intense characterization and long-term monitoring of remediation. The "ground truth" developed in this way will be used to validate models.

3. *Assessment and Interpretation.* Assessment and interpretation require the ability to model a broad range of phenomena associated with hazardous waste migration, cleanup, and emergency response. Efforts in all three of these areas are linked by a common need for computer simulation and data analysis. These problems involve complex processes and environmental heterogeneities and are generally amenable only to computer modeling. For process simulation, we must have the additional ability to model phenomena over long and short time periods. The simulation approach forms a basis for cost estimates of remedial measures and for assessment of method effectiveness and provides the rapid analysis needed in emergencies.

Simulations must incorporate the physics and chemistry of flow through the environment. Each situation to be addressed in cleanup or emergency response may be expected to have different environmental properties and waste characteristics. Systematic methods are needed for collecting and analyzing field data. Process simulation provides a means for design of data collection networks, and geostatistical analysis maximizes the use of collected data. An understanding of the transport processes and remedial method effectiveness learned at one site can be transferred to another, or from the laboratory to the field, only by computer simulation based on the mechanics of flow and transport and of chemical interactions.

The work proposed herein is leveraged by a significant investment in the computational tools for analysis and interpretation. Most of these tools require further development to address the wide variety of applications that may be expected in this program. In particular, the following are needed: more accurate models of multiphase flow and transport and associated waste migration phenomena; particulate transport models, for both colloid movement in the ground and aerosol and particulate transport in the atmosphere; the scaling of processes (such as dispersion and multiphase flow) between the laboratory and the field; stochastic methods for representing heterogeneities and their effects on migration; better models for specific remedial methods such as vacuum extraction, steam flooding, and bioremediation in order to assess field effectiveness; graphics pre- and post-processors and expert systems for better user interfaces; software quality assurance systems for all work done in this area; emergency response methods generalized for water-borne hazards; air- surface-water interaction models for both fresh and marine applications; and design, conduct, and analyses of experiments for validation of models.

The SERDP will benefit from atmospheric and surface-water emergency response simulators and the many simulators for groundwater and surface water flow and transport that already exist. Such models address single- and multiphase transport, as well as particulate and colloid movement. Work with industry in the area of improved oil recovery under the Oil Recovery Technology Partnership (operating under the aegis of the Fossil Energy office of the DOE) is directly applicable to this problem. Programs such as the Atmospheric Release and Advisory Capability, a jointly funded operation of the DOE and the DoD provide a basis for emergency response models. The DOE high-level-radioactive-waste program has driven the development of several computer codes for solute and colloid transport in groundwater. Software quality assurance plans developed for other environmental programs are in place at all three Laboratories.

Many of the existing codes upon which we will build are already being used to assess environmental problems within the DoD complex. For example, the Air Force Office of Scientific Research is funding model development on granular soils. The thrust of the proposed work is to profit from site-specific experiences to develop and implement approaches that can be applied under a wide range of conditions throughout the DoD and DOE complexes.

- Instrumentation. Advanced instrumentation for characterizing environmental contaminants is needed for application to a wide range of problems at DoD, DOE, and other governmental sites and elsewhere. Sources of air, soil, and groundwater contamination, must be identified, and the extent of contamination measured. Process control activities for waste minimization and process optimization must be developed and the data needed for environmental model validation collected. Therefore, advanced instrumentation will result in improvements in the cost and time required for analysis, enhanced accuracy and reliability of the analyses, remote and fieldable instrumentation, inexpensive sensors for long-term monitoring, and instruments for measurements not presently possible.

Instrumentation thrusts for site characterization include:

1. *Improved On-Site Chemical Analysis Methods for Waste Areas (real-time, remote, and long-term monitoring);*
2. *Improved Analytical Methods for Centralized Laboratories;*
3. *Real-Time Monitoring of Effluents (gas and water) from Waste Remediation and Production Activities;*
4. *Detection of Leakage from Contaminant Storage Containers; and*
5. *Instrument Development Associated with Site Characterization (geological and geochemical properties of current and future waste storage sites).*

The laboratories will perform research, development, demonstration, testing, and evaluation of an integrated suite of advanced chemical and physical characterization techniques and sensors. Such instrumentation includes chemical sensors such as optrodes, thin-metal and polymer film sensors, and metal oxide semiconductor and acoustic wave devices; radioactive materials sensors such as counters and laser spectrometers; physical sensors for storage container leaks; sampling devices such as penetrometers and aerosol samplers; fieldable instrumentation such as radiation counters and optical spectrometers; remote sensing techniques such as laser spectroscopy and fiber-optic methods; so-called hyphenated separation-analysis methods such as supercritical fluid extraction-Fourier Transform Infrared and advance chromatography-laser spectroscopy; and two- and three-dimensional imaging techniques such as tomography and resonant ultrasound.

Chairman NUNN. Thank you, Dr. Hecker. And thank you for the examples. That is very much in the spirit of what we hoped would emerge from this overall effort.

Dr. Buzbee, we appreciate you being here and you are batting clean up, today.

STATEMENT OF DR. BILL BUZBEE, DIRECTOR, SCIENTIFIC COMPUTING, NATIONAL CENTER FOR ATMOSPHERIC RESEARCH

Dr. BUZBEE. Thank you, Mr. Chairman. It is a pleasure to be here before the committee. I first heard of this program at a meeting hosted by Senator Gore last summer. And I have since had opportunity to discuss it with members of your staff, Mr. Chairman, as well as members of Senator Wirth's staff.

I am going to limit my remarks just to data collection and computer modeling in the context of climate research, and in particular, climate research applied to the global warming problem. I would make two points. Number one, in the short term, this program will provide a valuable augmentation to existing climate research. And number two, in the long term, the SERDP has an unique opportunity to bring the next generation of computing technology to bear on the global warming problem.

In the scientific circles that I travel in, there is a growing consensus that global warming is underway. But one does not hear people asking the question, "will it happen?," but rather, "when will it happen, where and how much?" Most of the information that we have about the future climate comes to us through rather sophisticated computer models that take information about the present and recent climate and project it forward into the future to get some insight as to what might happen.

Current studies indicate that global warming might take place primarily in the higher latitudes of the globe, and current studies indicate that change may be regional, that certain areas of the globe might get warmer, other areas might get colder, some areas may get wetter, some may get dryer. Now, regional change, particularly if it takes place in a short period of time can have significant impact on local economies, and so we in my community feel that there is a fairly pressing need for a much better predictive capability with respect to the future climate.

It is the case that today, current global models differ substantially in their predictions about the future climate. And to make them better, to improve their reliability and their accuracy, at least three things must happen. First, we must increase the amount of basic research that is being done with respect to the climate. We need a better understanding of the physics of the system.

In order to do that, two other things must take place. First, we need a lot more observational data. We need to be collecting it and storing it and making it available over long periods of time. Because it is through that data that we gain better understanding, we can validate models, things of that sort. And as Dr. Hecker indicated, for sure, space borne platforms can be a tremendous asset in that area. But it is also the case, the airplanes and ships and submarines can play a vital role as well.

And it is our hope that the Executive Council of this program will at least consider the use of some military vehicles in this regard. On a daily basis, the U.S. military has a variety of activities under way, observational activities. Hopefully those could be equipped with rather straightforward instrumentation modules that would not impair their primary military operation, but at the same time could collect valuable information, and do so in a cost-effective fashion, because they will be riding piggy back on existing operations.

It is also the case that we need a lot more computer power than we have available to us today to carry out simulations of the climate. And in particular, we need to couple the atmosphere with the deep ocean in these simulations. Very few climate simulations done to date include the deep ocean. And the reason for that is that it takes an enormous amount of computing to do so. In the past couple of years, we have done one such simulation at NCAR. It took 1,200 hours on a computer operating at approximately 100 million arithmetic operations per second.

That is an enormous amount of computing. Twelve hundred hours is approximately 7 calendar weeks. And of course, every super computer in this country has to serve many customers on a daily basis. And so the only way we can do these long-running simulations is to do them at nights and on weekends, when most of the users are off doing other things. In fact, that particular simulation took about a calendar year to carry out.

We need to be doing these things on a monthly basis as opposed to an annual basis. In fact, in that regard, the possibility of having DOD super computers made available at nights and on weekends is really, I think, quite an opportunity, and it is one that we hope that, again, the Council will support.

We at NCAR have been in conversation with colleagues down at the National Test Bed Facility in Colorado Springs, Falcon Air Force Base, whereby our climate models would be run on their super computers, again at nights and on weekends. The data would be transported, the output from these models, would be transported back to NCAR, inserted into our data archives, and made available to the university climate research community via national computer networks. Now, we stand ready to go forward with that project as soon as funding is available.

So in the short term, we see the SERDP, again, as providing valuable and cost effective data collection and storage, observational data, and in particular, we hope to see the use of military platforms explored. And again, giving access to climate researchers for use of DOD super computers will help us do computations that would otherwise go undone.

Now in my written testimony, I offer some ideas as to what the future opportunities are in this program. I am going to just talk about one of those at the moment.

Most of the climate simulations that the Congress is hearing about these days are done with so-called low-resolution simulations. Low resolution means that major topographical features such as mountain ranges, lakes, and peninsulas are not accurately represented. Thus, these simulations cannot provide predictive information at a regional level.

To get reliable estimates of the climate at a regional level, we need to use so-called high-resolution simulations, wherein the major topographical features of the continents are faithfully reproduced. To do climate modeling at this level of accuracy will require computers at least 100 times faster than anything we have today. And, it is my opinion that therein lies a remarkable opportunity for this program, that is, to help to bring the next generation of high-performance computing technology to bear on the climate problem.

And there are other aspects to it, as well. High speed network and data storage, and what have you, which I go into in the written testimony.

In summary, the SERDP, in our estimation, will be a cost-effective augmentation to existing climate research that will provide additional and much needed observational data, and will make possible computations that otherwise would go undone, and last, but I think perhaps most important, could provide a framework for a focused plan for bringing the next generation of computing and data storage and networking technologies to bear on this problem.

Thank you, Mr. Chairman.

[The prepared statement of Dr. Buzbee follows:]

PREPARED STATEMENT BY BILL L. BUZBEE, PH.D., NATIONAL CENTER FOR ATMOSPHERIC RESEARCH [1]

Thank you, Mr. Chairman, for the opportunity to appear before the committee today. My name is Dr. Bill Buzbee. I am the Director of the Scientific Computing Division at the National Center for Atmospheric Research (NCAR). Located in Boulder, Colorado, NCAR is a research center for atmospheric and related sciences, supported by the National Science Foundation and managed by a consortium of 58 universities and research institutions.

NCAR was established in 1960 as the country's first national atmospheric research laboratory. Its mission is to organize and conduct research programs that are beyond the capability of single universities, and to provide state-of-the-art research tools and facilities to the university and atmospheric and related science community at large. NCAR is committed to enhancing university research and education in the atmospheric sciences, and to facilitate the transfer of technology to both the public and private sectors.

The Scientific Computing Division (SCD) at NCAR provided the atmospheric and oceanic sciences community with a reliable, high-performance supercomputing environment for the development and execution of large numerical simulations, and for the archiving and handling of large data sets. SCD also provides networking and communications capabilities for a national user community of 1,250,750 of whom are off-site. SCD facilitates access to one of the world's largest atmospheric and climate data resources; a repository of 95,000 tape cartridges holding 17 terabytes of archived information. Computational facilities consist of a Y-MP8/864 Cray supercomputer and a Connection Machine Model 2 parallel processor. Both run 24 hours a day, 365 days a year.

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[1] The National Center for Atmospheric Research is operated by the University Corporation for Atmospheric Research and is sponsored by the National Science Foundation. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author and do not necessarily reflect the views of the National Science Foundation.

BACKGROUND

I appreciate the opportunity to comment on the Strategic Environmental Research and Development Program (SERDP). We learned of this idea in a meeting hosted by Senator Albert Gore last summer. I have also had the opportunity to discuss it with members of your staff, Mr. Chairman, as well as the staff of Senator Wirth. In a nutshell, SERDP is an excellent idea. It takes advantage of existing facilities and should prove helpful in accelerating progress in climate research.

There is growing scientific consensus that a global warming of the earth's climate is underway due to a variety of human activities, for example, injection of greenhouse gases into the atmosphere, deforestation, changing land use practices, and the like. Thus, the question is no longer "Will global warming happen?" but "Where will it happen, when and how much?" Since global warming has the potential to become a major societal problem, we at UCAR/NCAR see a pressing need to improve technical capabilities for understanding and dealing with it. To be specific, a predictive capability is needed wherein we can at least partially answer questions such as: "What will the climate be in 25 years in the midwestern United States, or the polar regions if . . . .?"

Of particular concern is the rate at which climate change might occur on a regional basis. Most models show that change will be greatest in the higher latitudes and less near the equator. Change is also expected to vary with topography and may involve increased frequency of extreme weather such as storms and droughts. The results could be significant for a wide variety of economic activities, such as agriculture, forestry, fishing, and energy requirements.

HOW SERDP CAN HELP IN THE SHORT TERM

Most of our information about global warming comes from experiments with large numerical climate models run on supercomputers. These are three-dimensional representations of atmospheric circulation around the globe and have three main components: the atmosphere, oceans, and terrestrial features such as land masses and ice caps. They also include simplified representations of physical processes such as precipitation, cloud formations, and surface effects. Current global climate models tend to disagree substantially in their predictions about the future climate. This is due in part to a need for improved treatment of physical process in the models and to the requirement for substantial computing power.

Improving the treatment of physical processes in models will require basic research to advance our understanding of the climate system. That, in turn, will require collection, storage of, and access to large amounts of observational data. This is an area where SERDP stands to make very substantial contributions. We noted earlier that climate simulations have three main components, the atmosphere, oceans, and terrestrial features such as land masses and ice caps. Currently, the U.S. military has a presence in all of those components on a daily basis. In principle, the military's ships, planes, and submarines can be equipped with instrumentation modules for collecting climate data. This is a valuable and exciting aspect of SEPDP, namely, the collection of climate data from military vehicles that operate in various parts of the globe. We strongly endorse this concept. The specification and design of these modules will have to involve the scientific community. The accumulation and analyses of associated data will also have to be done by the scientific community. But the day-to-day collection of data should be executed in such a fashion that it presents no significant or deletrious impacts on military operations. For the same reasons, the prospect of gaining access to existing data through the SEPDP is equally exciting.

We noted earlier that the computing requirements are dominated by three factors. First, we need information about climate change on a regional basis and this implies that our simulations must resolve spatial scales of approximately one degree in latitude and longitude with some 20 to 40 levels in the vertical. Second, the model must also incorporate the interactions between the atmosphere, oceans, land masses, and so forth. Finally, climate simulation must span several decades. Most climate simulations that have been done to date have the following characteristics:

— couple only the atmosphere and oceans,

— use a simple (e.g., single slab) ocean, and

— use low resolution (e.g., only resolve spacial scales to several degrees latitude and longitude.

Incorporation of the deep ocean into climate models is particularly important because oceans distribute heat and are a sink for greenhouse gases. Due to associated computational requirements, only three 100-year climate simulations have been done using a deep ocean model coupled to an atmospheric model. For example, a recent NCAR 100-year simulation[1] used the following resolution:

Atmosphere —4.5 x 7.5 degrees horizontal (latitude by longitude)
—9 vertical levels

Ocean —5 degrees horizontal (latitude by longitude)
—4 vertical layers

Clearly, this was a low-resolution simulation, yet about 1,200 CPU hours were required on a CRAY X-MP, and 1,200 hours is almost 2 calendar months.

Most supercomputer centers serve hundreds of clients who need daily access to the facility. Consequently, long-running climate simulations can only be done during periods of low utilization which typically are only a few hours per calendar day. As a result, climate simulations often take a year or more to complete. Once again, this is an area where SEPDP stands to offer a significant assistance by making available idle time on the DOD supercomputers for use with climate simulation.

So in the short term, SEPDP will provide a valuable augmentation to existing climate research activities. First, it will increase the amount of observational data that has been and will be collected about the climate on a global basis. Second, it will provide much needed computational capacity to support long-running climate simulations. Third, it will do both of these using existing facilities.

LONG-TERM REQUIREMENTS IN CLIMATE MODELING

Long-term requirements in climate modeling also involve collection of observational data about the climate system and computational facilities to support modeling. We recommend that the observational component of the SERDP be planned and organized to span at least a decade. It should take advantage of advisory bodies from the scientific community, and it should probably be coupled with selected space-borne observations to provide ground truthing for them.

The computational requirements are quite another matter. While the additional computing time that can be made available on DOD supercomputers in the short term will be valuable, the long-term requirements are extraordinary in their demand for computing, data storage, and networking capabilities. Thus, to properly address climate modeling will require the next generation of computing technology and dedicated facilities. Fortunately, emerging developments in computing, data storage, and networking make it technically feasible to substantially advance our ability to model the global climate.

To get a perspective of what will be required for high resolution, coupled atmospheric/ocean simulation, let's review the respective computational requirements of high-resolution forecast models and high-resolution global ocean models.

The European Centre for Medium-range Weather Forecasts (ECMWF) has extensive experience with high-resolution forecast models. Based on that experience [2], estimates of computational requirements for high-resolution, multidecadal climate simulations on the CRAY Y-MP are:

— Y-MP/8: 1° grid, 19 levels, 75–150 wall-clock hours/decade simulated,
— Y-MP/16: 1° grid, 19 levels, 15–30 wall-clock hours/decade simulated, and
— Y-MP/16: 0.5° grid, 19 levels, 120–240 wall-clock hours/decade simulated.

(These estimates assume that all available processors are used in parallel. [The Y-MP/8 has eight processors; the Y-MP/16 has sixteen processors.])

Note that a calendar week has 168 wall-clock hours. So the above estimates show that even if the most powerful supercomputers available are dedicated to high-resolution climate simulation, it would take several weeks to complete a single, multidecadal simulation. Also, these estimates do not reflect the additions to models that will have to be incorporated to improve the treatment of physical processes.

With respect to computational requirements for ocean simulation, the recent work of Semtner and Chervin [3] provides quantitative performance data. Semtner and Chervin completed the first global ocean, near eddy resolving simulation. Again, using all available processors in parallel, the associated requirements are:

— Y-MP/8; 0.5° grid, 20 levels, 200 wall-clock hours/decade simulated

Both the ECMWF and Semtner/Chervin models sustain 1.0–1.5 billion arithmetic operations per second (gigaflops) when executing on the Y-MP8. Based on the above performances, we see that a high resolution, coupled atmosphere-ocean model running at 1.0–1.5 gigaflops will require one-half to 1 month per decade simulated.

Thus, to routinely do such simulations over several decades, and do so within a reasonable period of calendar time (a few days), we will need computers that can sustain about 100 gigaflops. If all the major physical components of the climate are incorporated illustrated, then we will probably need a teraflop (one trillion arithmetic operations per second) computer.

USE OF HIGHLY PARALLEL SYSTEMS

The only way to achieve and sustain speeds of 100–1000 gigaflops is by means of highly parallel systems. This is due to the fact that the speed of a single processor is limited by the finite time required to propogate signals within the computer. Fortunately, very large-scale integration technology has made possible very powerful microprocessors and high-density chips, and as a result, parallel systems have been commercially available since the early 1980s. Today, the microprocessors used in these systems deliver from 5 to 25 million arithmetic operations per second (megaflops) on Fortran source code and in 64 bit precision. This performance is expected to double every 12 to 24 months. So by 1995, a system with a few thousand processors may be able to sustain 100 gigaflops. And by the end of the century, sustained performance at one teraflop is feasible and should be available if the High Performance Computing and Communication Initiative, proposed by the administration, is funded. Of course, a key question is whether climate simulation is amenable to parallel computation. Already, substantial research is underway to explore the applicability of highly parallel computers to the climate problem. Decisive results should be available within the next 12 to 24 months and there is considerable optimism among the researchers involved.

THE DATA PROBLEM

The NCAR supercomputer center is heavily used by scientists engaged in climate simulation. In recent years, NCAR has empirically observed that its user community is archiving about 0.5 million bytes (megabytes) of model output for every gigaflop executed. Thus, sustained performance at 0.5 gigaflops (e.g., the Y-MP/8) necessitates storage of about 7.5 trillion bytes (terabytes) per year, and sustained performance at 100 gigaflops would necessitate storage of 1,500 terabytes (petabytes) per year.

The volume of observational data available in the 1990s may be comparable to the volume of model output data (terabytes per year). For example, NASA's EOSDIS will require ingest and storage of approximately one petabyte per year.

It has been observed that ". . . in most scientific and engineering disciplines, data generation outstrips the ability of scientists and engineers to store and access the information . . ." The data archiving requirements of climate research in the 1990s will far exceed the capability of today's storage technology. Fortunately, in the 1990s, technology is becoming available that will improve storage density, access time, and transfer rate by at least an order of magnitude.

ACCESS TO AND ANALYSIS OF DATA

It is highly desirable that climate modeling output and observational data be easily accessible by a large and diverse university research community. Once completed, scientists need the ability to easily compare simulations at various points in timed space. Similar access and analysis capabilities are needed for observational data. Data must be visualized, compared with other datasets, and processed/reduced for distribution to collaborating scientists. In the 1990s, the workstation will be the center of the computational universe in the sense that the workstation will be the primary tool that scientists and engineers use to carry out and manage their computational work. One of their uses will be to retrieve "sizable chunks" (but subsets) of observed and model output data from remote archives and use the workstation to analyze them. This means that supercomputers and data archives must appear as attached resources to workstations. That, in turn, implies need for high-speed local and wide-area networks with which to support distributed file systems and distributed visualization. Again, all of this should be available if the High Performance Computing and Communication Initiative is funded. We must also improve the "bandwidth" for information access and exchange by collaborative researchers, e.g., we need electronic mail that includes graphics, equations, spreadsheets, voice, and even video. We also need distributed databases that support efficient search and retrieval of a variety of scientific data types. To efficiently accomplish this distribution requires a close coupling of storage, supercomputers, and visualization workstations via high-speed networks.

SYNOPSIS

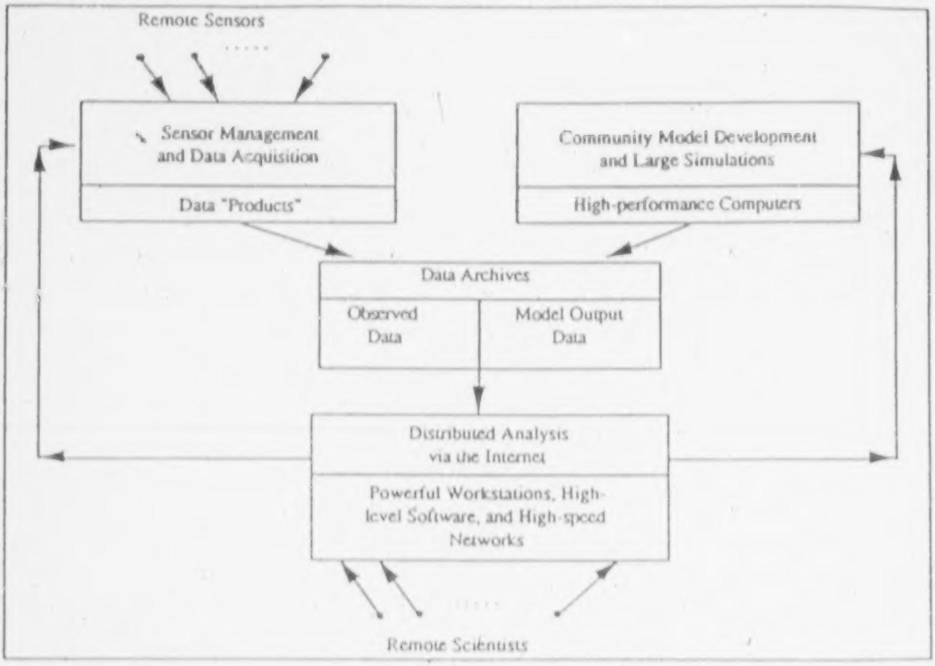
Over the next decade, we have the opportunity to improve our ability to model the climate and do so over regional spatial scales and decades of time. To realize this opportunity, we must use highly parallel computers. We must also improve the treatment of physical processes in models. Model improvement and validation requires easy access to vast amounts of global observations of the climate. Similarly, comparative analyses of simulations requires storage of and access to large amounts of output from simulations. Fortunately, emerging developments in parallel processing, workstations, data storage, and networking technologies make all of this feasible. In fact, by suitable integration of:

— dedicated, high-performance computers,
— capacitous data storage archives,
— powerful, software-rich workstations, and
— very high-speed networks,

we can create a global change distributed laboratory as illustrated in the attached diagram.

In conclusion, Mr. Chairman, I wish to make two points. First, SERDP is a cost-effective avenue for providing a substantial augmentation to existing climate research. It will provide much needed observational data on a global basis and make possible computations that would otherwise go undone. My second point is that, because of the potential adverse impact that global warming could have on our society, we have a pressing need to improve our capability for simulating the climate. To achieve that goal will require enormous amounts of computing power and capability for handling data. The requisite computing power via massively parallel systems should be in hand provided that the High Performance Computing Initiative is funded. Also, the High Performance Computing Initiative will provide much of the requisite networking capabilities. The requisite advances in data storage technology are well beyond the drawing-board stage in several American corporations. It appears that all the technical components for addressing the problem will be in hand. What we now need is a concerted and focused plan to integrate them in support of climate research. It may well be that SEPDP is an appropriate structure for formulating and executing such a plan.

Global change "distributed laboratory."


Remote Sensors
Sensor Management and Data Acquisition
Data "Products"
Community Model Development and Large Simulations
High-performance Computers
Data Archives
Observed Data
Model Output Data
Distributed Analysis via the Internet
Powerful Workstations, High-level Software, and High-speed Networks
Remote Scientists

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Chairman NUNN. Thank you very much, Dr. Buzbee.

I thank all of you for your enlightening and interesting testimony. Let me start with Senator Gore, and then I will rotate back and take his place when his time comes. And I will ask the clerk to keep up with our time, and give us notice as is customary.

Senator GORE. Thank you very much, Mr. Chairman. I certainly enjoyed the testimony from all the witnesses. An awful lot of good ideas have been presented to the committee here today. And we hoped that this program would stimulate a lot of original thinking and maybe even some competitive thinking, which is obviously what is going on here also. And I want to compliment the witnesses.

I do have some problems with some of the things that I have heard here. But first of all, I want to join the Chairman in complementing the Navy. The Navy has kind of stood out among the services in being very aggressive and imaginative in coming forward with an extremely responsive program. And I think that is quite remarkable. And I want to add my voice to that of the Chairman.

And specifically, as I mentioned earlier, the provision of the ice data has been extremely valuable to the scientists trying to understand changes underway at the polar ice cap.

I also want to specifically commend the Strategic Defense Initiative Office. Dr. Buzbee referred to conversations that he and I and a large group of others had last summer, in which, Mr. Chairman, the SDI Office was very forthcoming and helpful and imaginative in working out ways that the climate modelers might take advantage of some of the completely unused capacity at nighttime and on the weekends, and do so without compromising the national security in any way. And I was very impressed with what SDI did there.

I do not want to leave the other groups out here, because everybody has obviously been attempting to respond to this. I am a little concerned about the DOE response. Secretary Tuck, I note from Dr. Hecker's statement that you asked the three weapons labs to prepare the plan. What about the non-weapons labs? There are about six of them. I have a particular interest in Oak Ridge, of course, but in so far as it is humanly possible to separate that parochial interest, I would simply note that the premier expertise in energy use modeling in the Department of Energy has been in Oak Ridge. When the Soviet Union came to the United States for advice, they signed a contract with Oak Ridge National Labs.

Am I getting the wrong impression here, or have you focused on the weapons labs to the exclusion of the other six?

Mr. TUCK. No, Senator Gore, we have not focused our plan development solely on the defense laboratories within the Department of Energy. We are relying very heavily, though, on input from them. I had given the specific guidance in only one instance with regard to development of our plan. And I wrote in March of this year that the proposal that we will be submitting to the Department of Defense will emphasize two elements.

First, development of Complex 21 with a zero waste discharge goal. This was the thrust of underscoring how terribly important we view these environmental concerns with regard to the redesign and upgrading of the nuclear weapons complex.

And second, application of advanced DOE-DOD remote sensing technology to near-term environmental data gathering and analysis requirements of the U.S. Global Change Research Program. This in no way delimits or specifies that only defense laboratories within the Department of Energy will be afforded opportunities to make input to these two thrusts.

Senator GORE. Well, I just listened to Dr. Hecker's presentation, that DOE had asked him to poll the other two weapons labs and have the three of them come up with the plan. And then, when I heard the details of the plan delineated, here is Los Alamos' idea for taking one of the historic missions of Oak Ridge National Laboratory, and doing it in Los Alamos instead. Thereby, not giving the taxpayers the full advantage of the expertise that has been built up in the Oak Ridge Lab.

Mr. TUCK. We are interested in the expertise of all of our labs, and will bring the expertise of all of our labs to bear as we develop our plan and go forward with that plan to the Council.

Senator GORE. Why did you limit it to just the other two weapons labs, Dr. Hecker?

Dr. **Hecker**. From my standpoint, I did want to get a chance to respond also on the energy modeling, but let me say this was in response to the part of the legislation that says use the defense-supported R&D capabilities in response to the Environmental Initiative. And so I was specifically asked to tackle that aspect of it. What sort of technologies have we developed with defense R&D that can be brought to bear on this initiative?

And that is essentially what I focused on with the satellite example being a very good one, because there is a direct one-for-one correlation in the capabilities.

In the energy utilization model—and let me add that all of these are not responses to the specific request from the Department of Energy, but they are the responses of brainstorming amongst the three weapons laboratories to fulfill this requirement.

And again, the energy utilization—we are not saying that we are the only ones that can do that. Although, let me just add that we have also done energy modeling for the last 15 or so years, as have a number of laboratories. But again, the capabilities that we have developed with defense R&D and that we have worked very closely with the services, are what gave us the idea that, look, we can contribute. In addition to that expertise, we have an energy modeling capability.

And so the short answer to why the three weapons labs is, it was in response to the question, how can defense R&D help in this initiative?

Senator **Gore**. Perhaps we will have another round. Mr. Chairman, my time has expired.

Chairman **Nunn**. We will, Senator Gore, have another round. Senator Smith.

Senator **Smith**. Thank you, Mr. Chairman. Let me comment specifically on the Navy for a moment, since I was on some of those ships a few years ago and watched a lot of that waste being tossed over the fantail, wondering then why we did it. I commend you for what you are doing, but if we look at this issue on an international level, can you comment at all on what is happening with the other Navies of the world, or the other countries who also use those oceans? Obviously they are not, in many cases, up to what we are doing.

Is there anything that you are doing to try to reach out to them?

Miss **Schafer**. Indeed, Senator Smith, we are. As you point out, the U.S. Navy's contribution is relatively small. We estimate that of the plastics that find their way into the world's oceans, we contribute about 2 percent. We are working with other NATO nations and other international organizations that would like to apply the technology that we are developing through our R&D program for introduction on their fleets as well, at the appropriate time. We are certainly happy to make available the research that we have conducted as broadly as possible, including into the commercial sector.

Senator **Smith**. Secretary Tuck, there was some criticism when the legislation was passed that essentially you had an appropriation and no mission. You have had to work on that. Would you give some comments on how you are dealing with that criticism? I know it was addressed in some of the testimony here. But give me an overview as to what you are doing now to address that concern, as some members of the committee have expressed.

Mr. TUCK. Well, I hope I have made it clear in my statement. I certainly tried to, at least in the written statement, state how supportive we are of this initiative. We feel that a coordinated effort between the Department of Defense, the Department of Energy, and EPA is worthwhile in these efforts so we can eliminate duplication and we can find out more about what each other are doing in these areas, and we can bring to bear the experience within the particular laboratories, particularly from the Department of Energy's point of view, to some of these very important issues across a broader spectrum and in a more formal, broader, cost-cutting form than we currently do things.

I think it is very much a program worth the mission. And I think that we are making very fledgling, but nonetheless, first halting steps toward executing the direction of the legislation.

Senator SMITH. It is not an easy task, though is it? There is a great deal of overlap, perhaps too much overlap that could come as a result of this in order to be efficient, to get the most out of the dollars. The criticism was that in the $200 million appropriation only $150 million was actually funded for the initiative and some of that really did not go into what it was supposed to go into. Do you feel that is a correct assessment?

Mr. TUCK. No. We are right at the beginning of this process. We are far from very far down the road. As I understand the current situation, there is only the potential for about $120 million remaining in this exercise for execution in 1991. And that is only contingent upon a plan having been coordinated, approved, and worked out between ourselves and the Department of Defense and with EPA concurrence to the Office of the Secretary of Defense. And when that is done, there is the potential for the expenditure of that $120 million toward whatever that plan recommends.

We are 8 months into the fiscal year, roughly—7½, any way, and we are getting close to 8½ and we have yet to get this plan, as the Chairman has indicated, you know, through the system and down the way a bit.

Senator SMITH. Well, I know that the Chairman was involved in this legislation and it is good legislation. The scope of it is good. It just seems to me, as I look at it, there really should not have been a great amount of surprise in terms of what needed to be done. I do not know that you had to have a act of Congress, so to speak, to alert the Defense Department to the fact that we needed to do something regarding environmental cleanup.

Let me ask specifically, is there anything that you were doing prior to the legislation that in anyway conflicts with or is a problem with this legislation. Can what you are doing fit, dovetail nicely into this legislation? Or is the legislation a problem? Is there anything we ought to change or amend?

Mr. TUCK. No. I indicated in my oral statement and at greater length in the written statement, the benefits we thought that would be derived from this particular program. We do not see this as an initiative or a program that is conflicting with the mission that is already ongoing within the Department of Energy, but rather one that is complementary across a broader spectrum of activity of the government.

Senator **Smith**. Thank you, Mr. Chairman.

Chairman **Nunn**. Thank you, Senator Smith. Senator Exon.

Senator **Exon**. Mr. Chairman, thank you very much. I join you and the others in welcoming this distinguished panel here today. I am very much interested in what is happening in this particular area.

Dr. Hecker, let me ask you this. To what extent can the current Defense Meteorological Support Program satellite supplement our climatological data base? Do DOE researchers have full access to the DMSP data? And how is this being related back and forth to give us some early indication of where we are going or not going in this area?

Dr. **Hecker**. I think generally there is very good access to the DOD satellites, probably with exception of some, as you might imagine in the intelligence community. And I think the one part that should be looked at very carefully as part of this legislation, is whether there is information from the intelligence satellites that somehow could be sufficiently cleaned up to be of great use to the climate research community. I think that should be done, and should be part of this initiative.

Senator **Exon**. Dr. Osterman, I have a question for you. In your written testimony, you state that, "changes to the SERDP should be kept at a minimum, at least at this time." Though you suggested membership of the Vice Chairman of the Joint Chiefs of Staff should be deleted from the program Council, and should be replaced by one representative from the Army and one from the Navy, thereby giving each service a representative on the Council.

Why do you feel that is necessary, or how important do you think it is? And then I would like to hear from the other members of the Council as to whether or not they think a change in that fashion should be made.

Dr. **Osterman**. The basis for my recommendation, sir, is a position taken by the Vice Chairman of the Joint Chiefs of Staff, that his primary mission within the Department of Defense relates to our warfighting capability, that while he certainly supports and is appreciative of the Strategic Environmental Research and Development Program, that is not his primary concern nor his primary responsibility within the Pentagon. It was his recommendation that to afford broad representation across all three services on the Council, that he not participate, and that the Army and the Navy respectively recommend a person to serve on the Council.

Senator **Exon**. I do not know what the reason was for naming the Vice Chairman to that position, but I suspect it might have been that we wanted the highest levels to be involved in this program, recognizing there are many other duties. You know, one of the things that we wrestled with for a long time is the institutional philosophy that the people at the top might have—a lot of them were thinking that we did not want to be bothered with this. Our job is to fight wars.

Well, it is their job to fight wars. It is also their job, it seems to me, to be recognizing that when they go out to fight wars, we produce with them what we need to fight wars or have a deterrence from fighting wars, that the Joint Chiefs should be more directly involved. I suspect that we put him on there also, maybe to cut down the numbers of the members of the Council, and it seemed to me a little bit inconsistent for you to suggest that maybe we should not be expanding the committee, and yet, you would be expanding the committee if we followed your recommendation.

Dr. OSTERMAN. Yes, sir. It clearly would be expanded by one person. Our anticipation is that the services would nominate someone for the Council at the Assistant Secretary level, and thereby provide senior, mature leadership on the Council.

Senator EXON. What do the other members of the panel have to say about this suggestion, if they have any ideas one way or the other?

Mr. TUCK. I have no departmental position to express, I just simply would express this point, and that is that you are going to up the size of the Council from 9 to 10 and have that come from the DOD side. The Chairman, or the committee may wish to give consideration to upping the membership on the DOE side, or maybe the EPA side, as well, to sort of keep some semblance of balance, which seems to be, I think, the view of the committee when the number 9 was magically derived last year in the construct of the legislation.

Senator EXON. Dr. Hecker, you had a comment?

Dr. HECKER. I really do not have a position on that. The only thing I could say is that when we interact in the environmental energy arena, we would certainly interact with the individual services, since they have the responsibility for the energy and environmental aspects. But I do not have a position on the Council membership.

Miss SCHAFER. Speaking for the Department of the Navy, we certainly support the recommendation that the Department of Defense has made here and would be an enthusiastic supporter on the Council. The Navy was very actively participating in the development of an investment strategy. As has been pointed out, we have quite a bit of our resources put into research and development that is applicable and available for more effective coordination with the other services, research programs. And we think that this would be a good forum in which to do that.

Senator EXON. Thank you. I may have some additional questions for the record, Mr. Chairman. Thank you for calling this very important meeting. I will be reviewing the entire file on this because it is a high priority with this Senator. Thank you very much.

Chairman NUNN. Thank you. One of the reasons for putting the Vice Chairman on the panel, and I know we have the span of control problem, and that is something we all need to consider, is how much he can really get involved in. And one of the reasons for putting him on this panel was because they have actually the interrelationship with the CINCs, the Commanders in Chief in the field who control the resources. And if you want a ship to go somewhere to collect data and it is pa~~rt of an~~ overall plan, the Vice Chairman would have more command authority than let us say a civilian in the Department of Navy, or Department of Army. So we have to consider things like that. We may be able to work around it. Certainly, I think, all of the services ought to be a vital part of this.

Secretary Tuck, it was my understanding we were going to try to develop a cooperative, integrated research plan to utilize the talents of DOE and DOD in their laboratories and other capabilities. Your prepared testimony indicates a different approach, and that is, the way I read it, DOE was basically going to be preparing its own separate environmental strategy, and basically submit it to the Council on a take it or leave it basis. Am I reading that right?

Mr. TUCK. If that is the impression that I left with my testimony, let me seek to correct it now. We are going to work with this Council to form a single integrated plan. I was doing a couple of things in my prepared statement. I was simply alluding to an earlier debate which may not be necessary to relive, but nonetheless, I chose to do it anyway, in terms of last year and how we decided to go forward to set this statute—or at least input on how this statute might be structured.

I was saying that the way I see this thing at present, we have had some difficulty in getting off the mark. Because while three agencies are involved in the input to the integrated plan, one agency holds the checkbook. And what I was simply trying to possibly draw attention to was an input from Admiral Watkins last year, which went something along these lines. Let us see if we can get the resources to each of the three agencies. Let us see if we can have the Council serve as an integrator of their respective plans to make sure there is no duplication, that it is generally supportive of the thrust of the policy promulgated for the Council.

That is behind us now. We decided that, at least for 1991, that the moneys are only going to be in the hands or in the control of the Department of Defense. I am trying to insure that the Department of Energy's priorities are protected and reflected in this major overall plan. And I think that possibly by bringing the facts that I have just brought to your attention, I will have accomplished a great deal in that regard by simply leaving it right there.

Chairman NUNN. What I think we do not want to happen is some kind of arbitrary allocation every year that has no relationship to the various players' talents and the particular needs that are coming about. I mean, it seems to me some years you might want X number of dollars channeled in certain directions. And then as priorities change and as work is accomplished, move in the other direction. What I would hate to see is us get into the situation where say, X number of dollars arbitrarily goes to DOD, X number of dollars goes to DOE, X number of dollars goes to EPA.

I would hope the Council would have more flexibility in their plan, and that we do not get locked into that kind of rigidity and just look at this as another sort of pot of gold that can be grabbed and put on other priorities that were already pre-existent.

So we certainly want the input from every agency, and your plan will be a starting point, but we would hope that the Council itself would be a coordinating mechanism. I think we have all found in the last several years that within the Department of Defense itself, that the increased coordination between the services and the increased ability of the Joint Chiefs, and the Chairman of the Joint Chiefs to integrate those services, and the increased ability of the CINCs out in the field to integrate those services has greatly facilitated our operational capability.

I am not saying this is the exact pattern for this Department, but I would hope that we would have a coordinated approach that would have some flexibility in it.

Speaking of funding, Dr. Osterman, $120 million is what is available. It is my understanding that $30 million was transferred by an appropriations bill to DOE to clean up a private facility in Pennsylvania. Is that right?

Dr. **Osterman**. I believe the facts are, Senator, that $30 million of the SERDP appropriation was transferred to the Department of Energy for decommissioning and cleanup of the Apollo Nuclear Fuel Facility in Apollo, Pennsylvania.

Chairman **Nunn**. Was that an obligation of the Department of Defense or an obligation of the Department of Energy, or was it basically something that was just thrown in to a private clean-up effort? Was the government obligated in any way to clean up that facility?

Dr. **Osterman**. I cannot comment on that, sir. Perhaps the Department of Energy could. The reason for the transfer of funds is that the statute language required us to transfer $30 million to the Department.

Chairman **Nunn**. Right. I understand that you had no choice in the matter.

Do you know, Secretary Tuck, whether that was a governmental obligation to clean up that plant, or whether it was basically relieving a private commitment or obligation?

Mr. **Tuck**. I would like to double check with the Department, but I believe it was the latter, that is to say, relieving a private corporation of that clean-up cost. I do not believe—I would like to double check for the record—that that was an obligation of the government to clean up the Apollo fuel facility.

Chairman **Nunn**. Could you submit something for the record as to whether that was basically a relief of a private obligation, or whether it was a governmental obligation? And also, whether we have any other precedents for basically cleaning up a private obligation, if that proves to be the case?

Mr. **Tuck**. Yes, sir, Mr. Chairman.

[The information follows:]

Under its current Nuclear Regulatory Commission license, the owner of the Apollo, Pennsylvania site is responsible for the decontamination and decommissioning of the site. Its costs might have been shared with the Federal Government under "cost plus fixed fee" contracts as 55 percent of the work done at this site was for commercial customers, and the other 45 percent was performed under government contracts. However, it is impossible to ascertain what potential contractual liability might exist without reviewing the numerous, mostly closed out, contracts that would have been executed over the past 20 years (assuming they have not been destroyed and can be retrieved from the government's national archives).

There is no precedent for DOE's expenditure of Federal funds for the decontamination and decommissioning of privately-owned radioactively contaminated sites that are currently licensed by the Nuclear Regulatory Commission and where the license requires the site owner to decontaminate and decommission the site.

Although DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP) does involve the clean up of radioactive contamination at privately-owned sites, none of the activities that gave rise to the radioactive contamination that DOE is cleaning up at the FUSRAP sites were conducted under either current NRC licenses or other terminated Atomic Energy Act licenses that were issued prior to the creation of the NR, and all of these activities were performed exclusively for the Federal Government. However, DOE is also undertaking one decontamination research and development project, which was specifically authorized by Congress, involving the clean up of several privately-owned sites, which were formerly licensed and where some work was performed for commercial customers.

Chairman **NUNN**. Now, my understanding is, Dr. Osterman, we have $120 million left. Could you tell us what the status of that is now, the $120 million? And obviously it is going to be late in getting started. Are you anticipating that that will carry over to fiscal year 1992, or do we need to do anything in the authorization bill or appropriations bill to affect that?

Dr. **OSTERMAN**. Mr. Chairman, it is my understanding that those funds will remain available for application to the Strategic Environmental Research and Development program pending the development of an integrated plan and its review by the Council and submission to the Secretary of Defense.

Chairman **NUNN**. Is that money going to be available in 1992 without any further action?

Dr. **OSTERMAN**. I would prefer to take that question for the record, and seek the advice of the OSD Comptroller, sir.

Chairman **NUNN**. Well, how about letting us know about that, exactly what the plans are, and whether you need any further authority to be able to carry that forward?

Dr. **OSTERMAN**. Yes, sir.

[The information follows:]

STRATEGIC ENVIRONMENTAL RESEARCH AND DEVELOPMENT PROGRAM

Yes, once an integrated SERDP plan is developed and approved funding will be made available.

Chairman **NUNN**. Could you tell us whether you need any more money beyond that for fiscal year 1992?

Dr. **OSTERMAN**. No, sir. I believe that the plan that DOD, DOE, and EPA are currently developing will be covered within the available $120 million, assuming that that is carried over to fiscal year 1992.

Chairman **NUNN**. You will need that to be carried over, though?

Dr. **OSTERMAN**. We will need that to be carried over to execute the emerging program, yes, sir.

Chairman **NUNN**. Secretary Tuck, do you want to comment on that, or anybody from the EPA? Do you agree that we need to carry over for 1992 and make it available in 1992?

Mr. **TUCK**. I am just stating the obvious. There is no money in the Department of Defense or Department of Energy legislative proposal or budget for fiscal year 1992 to fund this initiative, to fund this program. So if there are going to be dollars in 1992, they are either going to be carried over from 1991, or they are going to be separately authorized or appropriated for 1992 expenditure.

Chairman **NUNN**. How about EPA?

Dr. **RUSSO**. Depending upon the outcome of the meeting on May 30 of the Council, if following that, the funds are not released to be expended in fiscal year 1991, then yes, they would have to be carried over into 1992.

Chairman **NUNN**. Dr. Osterman, can you clarify that after this May 30 meeting, if not sooner, and let us know because we are not going to be marking up our bill until after that. And we would like to make sure that we know exactly what the Department's position is.

Dr. **OSTERMAN**. Yes, sir, Mr. Chairman, I would be happy to do that.

Chairman **NUNN**. And the same thing from DOE, if we could, Mr. Tuck.

Mr. **TUCK**. Yes, sir.

Mr. **TUCK**. In order for the SERDP initiative to be effective, it will be necessary to carry over fiscal year 1991 funds into fiscal year 1992. No funds have been released by the Department of Defense to the other agencies for the purpose of executing SERDP. Because we are approaching the close of the fiscal year, it may be that Department of Defense fiscal year 1991 funds will remain for this purpose and they would have to be carried over to fiscal year 1992.

It is important to note that because SERDP funds were appropriated to the Department of Defense, they come under the DOD 2-year funding cycle.

STRATEGIC ENVIRONMENTAL RESEARCH AND DEVELOPMENT PROGRAM

Dr. **OSTERMAN**. RDT&E funds are available for obligation for 2 years. SERDP funds not obligated in fiscal year 1991 will be carried over, and made available for obligation in fiscal year 1992 as requirements dictate.

Senator **NUNN**. Senator Gore.

Senator **GORE**. Thank you very much, Mr. Chairman. I wanted to follow up on a couple of your questions earlier. It is my understanding, Secretary Schafer, that there has been a formal agreement by the Board to the effect that 10 percent of the funding will go to EPA, 50 percent to DOD, and 40 percent to DOE. Is that correct?

Miss **SCHAFER**. I would like to defer to Mr. Osterman for that question.

Senator **GORE**. Oh, I am sorry. I understand. Please, Dr. Osterman, I should have put it to you in the first place.

Dr. **OSTERMAN**. Senator, I think I should respond in the following way that some planning guidance has been provided to each of the participants in the SERDP to assist them in putting together their investment plan. However, the final allocation of funds, as the Chairman mentioned earlier, is clearly the prerogative of the Council and the decisions the Council makes with regard to the investment strategy.

Senator **GORE**. Is it going to end up 10–50–40?

Dr. **OSTERMAN**. No, sir. I do not see how that could possibly happen. Please recall that there are at least two levels of advice and decisionmaking the proposals will have to go through. One is the Scientific Advisory Board, which I alluded to earlier. They are clearly going to make recommendations to the Council based on the merit and quality of program submissions. And then the Council will subsequently make decisions. So if your question is, is that going to be rubber stamped? My response is absolutely not. The program will be based on merit.

Senator **GORE**. How have I gotten this impression that there has been this agreement? Is this somebody making this up and telling me this?

Dr. **OSTERMAN**. No, sir, not at all. I believe that my comment was that planning figures had to be provided to each of the participants——

Senator **GORE**. Those are the planning figures.

Dr. **Osterman**. Yes, sir.

Senator **Gore**. All right.

Dr. **Osterman**. If I may continue, Senator, that simply precludes extraneous administrative effort in producing a program, say, for $100 million, when the realistic appraisal is that it is going to be somewhere in the ballpark of $50 million.

Senator **Gore**. Well, I know how strongly the administration is opposed to quotas, and I do not want you all to use quotas.

Dr. **Osterman**. Yes, sir. That is understood.

Senator **Gore**. All right. Now, back to this business of the defense labs and the non-defense labs. Secretary Tuck, in the legislation, the law specifically provides that DOE poll each defense lab and each non-defense lab, and yet today we have gotten the impression here—I have anyway—as I mentioned earlier, that it has been translated in a way that emphasizes only the defense labs. Where is Mr. Decker today?

Mr. **Tuck**. I did not know he was invited to testify.

Senator **Gore**. Pardon me.

Mr. **Tuck**. I am not aware that he was invited to testify.

Senator **Gore**. Okay.

Mr. **Tuck**. He was last sighted at the Department of Energy at about 9:30 this morning.

Senator **Gore**. All right. Has he been asked to provide the comparable non-defense lab plan which looks like the one Dr. Hecker has prepared for the Defense labs?

Mr. **Tuck**. I am not aware that he has been. Let me tell you what I am going to do. I have had a conversation with Dr. Decker, I have had a conversation with some of the other Assistant Secretaries of the Department. In preparation for this hearing, we were all together yesterday, including Dr. Decker, to insure that everybody knew what the other fellow was going to say. And I will get them together again to make sure that they understand exactly what is planned with regard to the preparation for our plan to go forward to the Council meeting on the 30th, and to insure that they have an adequate opportunity for input.

Senator **Gore**. Okay. Well, again, just to cut through a lot of the games of dialogue here, the impression that I have is that DOE was unhappy about this program and finally decided to participate in it. And I was very glad that they did.

And let me say, incidentally, Secretary Tuck, that I will oppose the DOD idea of adding an extra member to the Board in a way that unbalances the ratios. Because I know how difficult and how important it was to get a ratio that you all felt comfortable with. And I had hoped and expected that after this initial peak was worked through the system, that this thing would work out. And I still think maybe it will. I think that maybe it is slowly working out. I have the impression that at this stage, at least, what DOE has decided to do is to assume that this will be a kind of a flash in the pan, and to steer the money toward the effort to design the new weapons complex and use it in a way to handle waste management problems there. And not respond in a way that we had hoped would occur. And that is you would really look across the board at the DOE facilities and recognize a lot of the really imaginative contributions that could be made.

I think that can still be done, but if this thing is going to make the contribution to the national interest that we hope it will—and that is what we all are after. It is what you are after, it is what everybody else on the Board is after, it is what this committee is after. Then, we will get farther toward that goal if the participation of DOE is in that spirit.

I do not want to invite you to argue with every point that I am making here. If you wish to respond, you are certainly welcome to. But I just thought I would cut through some of the dialogue and tell you what I think is going on and what I think should go on.

Mr. TUCK. Well, I think that particularly given the mess that we are looking at at the Department of Energy Weapons Complex, aggregated over 50 years of the production of the materials and the components of special nuclear materials to make the nuclear weapons of this Nation, that we ought to pay a lot of attention to the environmental questions associated with the next generation, assuming there is one, of Complex 21, as we term it. I think that will be money very well invested at this particular juncture.

If we can design an element or put into the equation that is going to produce this Complex 21, the goal of waste minimization to the nth degree. I mean, anyone who has looked at the dollars that are projected to have to be expended by this Nation in its national interest to clean up the mess that is now behind us, I do not think would disagree with the thrust of where we are going. But I did not say that is where we are going to spend every element of the SERDP dollars that may accrue or come to the Department of Energy by any means.

I also emphasize significantly the global warming initiatives that have much broader spectrum of activity within the Department. And again, this Council will decide what the priorities are going to be in terms of the expenditure of the dollars that are made available, not simply the Department of Energy. We will have a plan, and the Council will review it. And the Council will make a determination about whether or not the DOE plans are going to stand up. And I think that is what the legislation envisions and I think that is how we are going to proceed.

Senator GORE. Mr. Chairman, my time has expired. If I could just add one comment. I agree that whatever money is spent appropriately and wisely to anticipate and deal pre-emptively with the waste problem at the new complex will be money well spent. But this program is really designed to do more than that. And if DOE simply takes the approach of saying, well look, we have certain veto powers in the way this Board operates, and we are going to sit down and veto until the cows come home until we get our way. And we are going to take the 40 percent of this fund that is de facto allocated to us, and we are going to use it to offset money that we would otherwise have to spend from the rest of the budget to help design this new weapons complex.

If that is the de facto result of the way DOE participates in the program, then the national interest will not be served as well as it should, in my opinion. Because I think that money should come through another route. And I think that this Council, while it does retain authority, can act only within certain boundaries of flexibility determined in part by the willingness of DOE to act in good faith, and not simply use its various veto powers at each stage of the process to get a de facto quota.

Thank you, Mr. Chairman.

Chairman **NUNN**. Thank you, Senator Gore. I certainly share those sentiments. I hope that we are not just going to be shifting around funds here, something that would otherwise be funded from another source. There is just too much opportunity here. But I also believe that the clean-up part of what is going to be undertaken does have broad application, across agency boundaries, and really, outside the government.

Out of this whole effort, I would like to see the United States become the leader in environmental technology in the world. Period. Across the board. Maybe not in every technology, we will never achieve that. But I think we have an effort here in a field that is going to be one of the growth industries, I believe, for the next 20–30 years to become the leader in the world. And we have an obligation in certain respects with energy clean-up, nuclear waste clean-up, the clean-up of defense installations.

We, in effect, can take this obligation we have to clean up our own mess and turn it into an opportunity for environmental leadership. It is not like we have a choice. We have to do it. So I think that has a place. But I hope the Department of Energy will have a much broader view than simply that. I think, as Senator Gore said, there are an awful lot of things that we need DOE's expertise in.

And I also believe that National Laboratories have such enormous capability in this post-Cold War period, where we certainly are going to continue to have nuclear weapons and nuclear developments, but at a lesser pace than in the past. I think that weapons laboratories as well as many of the other laboratories have a tremendous role to play. And the great talent of people that we can channel in this way and unleash their energies.

And so I hope DOE and DOD and EPA and all the others will understand what is behind this legislation, and what we hope will come out of it. But I have never seen anything get where Congress can implement it. It has to be implemented by folks like you all. And I am pleased with your testimony today. I just believe that it will be a real sad development if we got into bureaucratic squabbles that obscured the larger opportunity here.

Dr. Buzbee, you are involved, I believe, or your group is involved in the Kuwait situation in terms of the oil fires, the unfortunate development there, but also there is an opportunity here to learn one heck of a lot. Could you tell us a little bit about that and the way you see that challenge and opportunity?

Dr. **BUZBEE**. I can tell you I know a little bit about it, so that is all that I can tell you. Indeed a consortium of government agencies are attempting to put together a campaign whereby at least aircraft will be available to fly daily through the clouds and collect information about the impact, perhaps on the monsoon season and other aspects of the environment. I think everybody is ready to go. There is a lot of enthusiasm, a lot of attention being given to it at high levels. But the last word I had, the requisite funding was not yet in place.

Chairman **NUNN**. I understand National Geographic has taken a role in that. They have taken a leadership role?

Dr. **Buzbee**. Yes, sir, they have.

Chairman **Nunn**. Is the government welcoming this opportunity right now? Are we having different reactions from different agencies, or what is your personal opinion about the state of play here?

Dr. **Buzbee**. It is the case the University of Washington aircraft is in Egypt, and I believe on a site today. The NCAR aircraft is in route. NSF is providing funding. It sounds like everything is taking place.

Chairman **Nunn**. Is National Geographic Magazine also participating?

Dr. **Buzbee**. They have played a very strong leadership role in facilitating the consortium and getting the initiative under way.

Chairman **Nunn**. Well, I think that is a terrible tragedy that also presents an opportunity to learn one heck of a lot about the atmosphere and the effects here.

The Defense Nuclear Agency, as I understand it, is a leader in the development of high-powered electronic beam generators for nuclear weapons' effects research. As a result of this work, I understand that DNA has developed a low-cost electronic beam generator that appears to be capable of removing sulfur and nitrogen oxides from smoke-stack emissions of coal-fired electrical power plants.

The commercial viability of this scrubber could insure economical compliance with the Clean Air Act for uses of high sulfur coal. And of course, it is very, very important in high sulfur coal states as well as the consumers there. Dr. Osterman, are you presently evaluating this proposal and what is the status of it?

Dr. **Osterman**. Yes, sir, Mr. Chairman, the Defense Nuclear Agency has submitted a proposal to conduct that work under the Strategic Environmental Research and Development Program, and it is currently being analyzed by the services with regard to feasibility.

Chairman **Nunn**. Are outside interests involved in this at all in terms of pushing it? Do they know about it? Is there already coordination going on with the people outside the Department of Defense? Where are you in this respect? What is the status? Just being studied, or where is it?

Dr. **Osterman**. To the best of my knowledge, Mr. Chairman, there is no one pushing it from the outside, or at least I have not felt the pressure. It is simply a submission by the Defense Nuclear Agency in an area of their competence to contribute to the program.

Chairman **Nunn**. Will the Defense Nuclear Agency also benefit from further development of the electron beam scrubber?

Dr. **Osterman**. I think so. They employ that device in their nuclear weapons program, and it has the potential of dual use, both within the environmental arena and the nuclear weapons arena. Yes, sir.

Chairman **Nunn**. Have you identified any military or other facility to field test this scrubber system?

Dr. **Osterman**. Sir, first we have to determine its feasibility and the merit of the proposal, and its application to our needs.

Chairman **Nunn**. I hope you will keep us informed on that. I think that has some real promise.

Dr. OSTERMAN. As before, of course, the final decision for funding of that and all other proposals rests with the Council.

Chairman NUNN. Right.

Secretary Schafer, I understand the clean up of sites contaminated with ordnance such as firing and bombing ranges is not possible with current technology. Could you give us some indication as to the magnitude of this problem and what must be done to address the problem? And I understand the Hawaiian Islands have a particular problem there.

Miss SCHAFER. The problem that we face with removal of ordnance from bombing ranges relates primarily to the ability to locate unexploded ordnance, and so research has been directed to find more sophisticated ways to do that. It is obviously dangerous to just walk the area in places like Kahoolawe, which is very remote, and the terrain is very unstable, which makes it a particularly difficult challenge.

At other places, such as Camp Pendleton, a Marine Corps base in Southern California, sweeps are done regularly of areas that had been used. And we know that under better environmental conditions this can be done with reasonable safety.

Chairman NUNN. My time has expired, Senator Gore. I am going to yield to you in a moment. I have got to step out and meet with a group, if you do not mind, I will come back and finish. But let me just have one other question, if I could here.

The Navy is a significant user of CFCs and other substances that destroy the earth's protective ozone layer. Could you describe the magnitude of this problem from the Navy point of view, Secretary Schafer?

Miss SCHAFER. We use CFCs for cooling aboard Navy ships, and in particular submarines. The question is not just a matter of finding a substitute drop-in chemical, but rather re-engineering the entire cooling system. We are working very hard on this. A significant amount of our research funds are devoted to this effort.

Likewise, we use halons for fire fighting systems on-board ship, as well as on aircraft. And the safety of our aviators and sailors is very much at stake, so looking for substitutes is also a very high priority for us. But the important point is that it is not just a search for a particular chemical, but rather a chemical and a system for using that chemical on-board ship that is the challenge. And it is an expensive one that we have to face.

Chairman NUNN. Dr. Hecker, I understand Los Alamos is involved in this area. Could you tell us about that?

Dr. HECKER. Yes, we are. We are working both with the Air Force as well as with the Department of Energy, specifically looking at a concept that is called super critical water oxidation, essentially doing this at temperatures and pressures where reaction rates are extremely rapid but where the products are innocuous. And so we are currently doing research and are about to go into a demonstration phase of using this technology to help in this area.

Chairman NUNN. Thank you. Senator Gore, I yield to you.

Senator GORE. Thank you, Mr. Chairman.

Let me follow up on the Chairman's questions about CFCs and expand it from the Navy to the other witnesses. Will the SERDP program have a role in the DOD effort at CFCs minimization? We will focus on DOD for a moment here. Do you anticipate that or not?

Dr. **Osterman**. Yes, Senator, we do. In the draft investment strategy which we in the Department of Defense currently have in hand, there are proposals to address replacement for 1301 Army tanks. Also, replacement halons in Air Force bombers. So yes, the answer is we would, at the present time, plan on dedicating funds to address that issue, assuming that the Council feels that they are worthwhile and meaningful.

Senator **Gore**. Let me put a hypothetical to you. First of all, Secretary Tuck, did you want to—I will give you a chance to respond to that if you wish to. Where the CFC threat to ozone depletion is concerned, some of the leading scientists in this field have said that they desperately need atmospheric samples from the troposphere—not that high up in the sky—but they do not have the practical ability to collect it right away.

NASA, which plays a lead role along with NSF in formal global climate program, has a limited number of conventional airplanes that are outfitted for this kind of work. And yet, these are specific sampling missions that need to be carried out right away. Just as a hypothetical, how would this work?

One of the capabilities that the SERDP, seems to me, gives this country is the capability for the scientists who are really eager to answer these questions for the Nation to go to the SERDP and say, look, we know that the various services have planes flying in these latitudes on a regular basis, we have got these instruments. Is there a way to get us this sampling fairly quickly?

Now, think this through with me, Dr. Osterman. How could that work? First of all, do you agree that that is a feasible mission for the SERDP—among the feasible missions that it ought to perform?

Dr. **Osterman**. I agree, Senator, but I would like very much to defer to Colonel Aufderhaar, who is our staff specialist in atmospheric sciences, and ask him to engage in this dialogue with you, if you do not object.

Senator **Gore**. That is fine. I am really as interested in the institutional aspects of it as in the sampling aspects of it. I would be glad to hear from him. But what I am most interested in is, let us say Dr. Sherwood Roland, just to use a specific example, from California—probably the leading expert in the world on ozone depletion; 17 years he has been out there talking about this, made the initial discoveries, and the like. And he says, we need to get these atmospheric samples as quickly as possible. There is no way to do it.

If somebody said to him, well, you know, here comes SERDP, why do you not ask them if there is a way to do it? How, institutionally, could something like that work?

Dr. **Osterman**. I think it depends on the platforms and vehicles that would be available to accomplish that sampling. And again, Colonel Aufderhaar is much more knowledgeable than I am. He is right here, sir.

Senator **Gore**. Fine.

Colonel **Aufderhaar**. I am not sure that the Defense Department is ready to volunteer all their aircraft to be sampling platforms for that type of activity. But I suppose that if an instrument could be provided that was small and did not interfere with the primary mission of the aircraft, the SERDP Council probably could entertain a proposal along those lines.

Perhaps that type of proposal could come in through one of the Energy or Defense laboratories to the Council. The Department of Energy and EPA have already fairly extensive ozone research programs. Perhaps they might present this type of proposal to the Council.

Senator GORE. I will be glad to talk with you further on an informal basis, because I think the country would be well served if this SERDP program could, in at least some of its aspects, develop enough flexibility and be light enough on its feet to respond quickly and affirmatively to legitimate needs, well articulated to the Council, reviewed by the Council quickly, and affirmed as being very much in the national interest.

So we can talk later about this. I will give you another specific example that is a Navy example. We had hearings earlier this week in the science subcommittee about what is happening to ocean currents as a result of global warming in the Arctic. And the scientists say, well, there is one critical bit of data that we do not have. There is no way to get it except with instruments that are dropped by submarine. Is there any possible way to do that? Well, you know, the Navy has informally said, well, there might be; let us look at that.

And so if the Navy can do that, it seems to me the Air Force could do that also. And I would challenge the Army and the Air Force and the Marines and the Coast Guard to match what the Navy has done in this program. I have bragged on them too much, I know. But really, I would like to see that very much.

I heard that beeper go off, Mr. Chairman, but I wanted to say briefly——

Dr. BUZBEE. Senator, could I just make a brief comment?

Senator GORE. Yes, please.

Dr. BUZBEE. I believe that the university research community would like very much to be able to come to the Council with precisely those kind of proposals.

Senator GORE. Well, see there, Dr. Osterman, there is a grassroots response right away. Secretary Schafer.

Miss SCHAFER. I just want to point out, the Marines do ride with us, Senator Gore.

But an important point that needs to be made here is that our deployment of ships and submarines and aircraft is related to our mission and our training responsibilities.

Senator GORE. Absolutely.

Miss SCHAFER. That may not be the same schedule or location as what you would need for a scientifically designed program to gather data for an integrated research program.

Senator GORE. Absolutely. But on the other hand, the military airlift command conducts hundreds of scheduled and unscheduled flights around the globe on a daily basis. Navy P-3s and Tacamo aircraft patrol the oceans on a regular basis. Navy carrier aircraft fly combat air patrols over all of our carrier task forces as they are under way. There is a lot of flexibility to respond to the kind of request that Dr. Buzbee and his colleagues are putting forth.

And you know, just to underscore the urgency of this, this is a very big deal. I mean, I do not think there is the controversy about global warming that Dr. Hecker alluded to. But leaving that aside, there is no controversy about the ozone problem. I mean, that one has been nailed down completely. And these fellows are saying, gee, we have got to get this data.

Did you want to say something else, Dr. Buzbee?

Dr. **Buzbee**. I had one personal comment. I happen to know some of the people in the military in their twenties and thirties. I have a boy in the military. And that generation of Americans is very environmentally conscious. I think if they were given the opportunity to carry out these kind of missions, they would do it with great care and enthusiasm.

Senator **Gore**. There is no question about it. And all you need to do is to think back to these interviews with the young servicemen and woman who were involved in the distribution of food to the Kurds. I am not using that as an example of an alternative mission, but I am using it as an example of the kind of response that you saw from the military. It is fantastic. All of the services involved there and the individuals who participated said, you know, this feels great. We are ready to go. We are gung ho. We are going to do this well.

And I think you are right, Dr. Buzbee. I think you would see a tremendous morale boost out of that. And I have talked with some of the people who have done these initial programs, and they are very enthusiastic about it.

Dr. Osterman, what type of assistance do you think—well, before I ask this question, anybody want to—I just will finish this up by saying I would like you to get back to me or to the committee with your suggestions on how the SERDP might, within the constraints of the statute and the procedures you have established, set up a responsive format to allow university researchers and individuals in the global environmental research community to come to the SERDP and say, look, here are specific needs that you can get consistent with ongoing military missions at very low cost, and this is why we believe it is an extremely high priority for the Nation.

If you could get back to us on that, I would very much appreciate it.

Dr. **Osterman**. Yes, sir.

Dr. **Hecker**. Senator Gore, could I make a comment? I do not have that formula for you, but I have an example, and it is the one that I mentioned earlier. Essentially, the way that example came about is very much in the way that you just described. There were, let us say, climatologist researchers out there in the university community that had the interest, in this case, of making these thermal radiation measurements just like the ozone measurements.

And our people doing climate research were discussing this issue with them. And so they brainstormed and said, how could we get quick access? In this particular case, it was the small satellites in order to beat the late 1990s for getting more information. And so there was the collaboration between university community, laboratory—we had decent connections with DARPA and the Department of Defense. And so in that particular case it worked. And I think your comments are right on the mark. We have to make that possible.

Senator **Gore**. Yes, I agree. Your example is a little bit different in that you are not proposing to use a military platform that is already going to be up there in use anyway. I am not opposed to what you are suggesting there, but having Los Alamos start its own space launch program is different than putting an instrument on a Tacamo that is already out on patrol.

Now, do not get me wrong in the tone of my comment. I think that some competition, to say to NASA, for example, look here is an interesting idea that might get us some of this critical data much quicker—now, I think you need to think through, and I will say this to Dr. Osterman—and really I am saying it to everybody on your Board. You need to think through the way your coordinate with the ongoing global change program, because we are pressing them in the space committee, for example, to come up with faster, cheaper, better ways to get this data, including such options as the PEGASUS.

So I am very impressed with PEGASUS, and I think that is imaginative thinking on your part to come up with that approach. And I think the fact that you do come up with it may gig them a little bit. And I like that, because maybe this will stimulate a little more responsiveness there, a little more speed. But I do think it is a little bit different from the other example.

Dr. **Hecker**. Sure.

Senator **Gore**. Let me follow up on one other thing you said, Dr. Hecker. I believe it was you. In one of your responses earlier, you talked about the intelligence data that could be possibly scrubbed and brought into the open. Without going into it in this session, let me say that I have been actively involved in a dialogue for more than 2 years now with the intelligence community and with each aspect of the intelligence community in an effort to identify exactly how that can be done.

I might say that the Navy's ICE data was highly classified, top secret. And yet, a way was found to scrub out the national security part of it and facilitate the analysis by scientists. I think the same thing is true with some of the spy satellites. Here, one of the major questions that we are trying to answer as a country and as a world is, what has been happening to the earth's surface? We do not know. I mean, in a cumulative way, in specific, endangered environments. And yet, we are taking pictures of it all the time, in some cases, pictures of the very areas that environmental scientists are most curious about. And yet, it is over in one part of the government and it is not available to the rest.

So I wanted to affirm the wisdom in the comment you made and tell you that we are actively working on it. I might say that I have found the same responsiveness in the intelligence community, thus far, that I have found in the Navy. And the same kind of attitude, Dr. Buzbee, on the part of the individuals who are individually concerned and realize why this needs to be done.

Let me also say that your suggestion, Dr. Hecker, for using RPVs is one that has been explored and needs to be explored further. And I would maybe suggest that this be a topic of discussion. If the military has RPV technology that could be adapted to the kind of atmospheric monitoring in question here as Dr. Hecker suggests, I personally think that is a really fruitful area to be explored.

Now, Dr. Osterman, you said in your statement that the SERDP could emerge as an instrument for coordinating the other environmental work being done by these agencies in addition to that which is funded specifically by SERDP. Do other members of the panel share the optimism that this might be feasible?

Dr. RUSSO. EPA certainly does. We think there are many opportunities that do not have to do with funding of sharing data, sharing information. In fact, one of our proposals we are bringing to the Council is a clearinghouse transfer kind of center that we all just do as part of our own—or funded by our own day-to-day business work.

Senator GORE. Secretary Tuck.

Mr. TUCK. I am not so sure just yet. It is a little premature, I think, for the Department of Energy to say what additional tasks or functions or coordination effort might be provided by the SERDP. Let us get up; let us get running; let us find out if we can do it on the scope and at the level that is currently funded. And then let us ascertain, it would be my view, with regard to what the next steps might be.

Senator GORE. All right. Now, another statement that triggered some extra optimism for me was your statement that this may point us toward a national technology base for environmental protection. Was this just a rhetorical flourish, or do you think this is a realistic possibility?

Dr. OSTERMAN. I think it is probably related to the scope of activities that the Council will oversee. If the two Departments and the one Agency can come together and establish a framework for reviewing and coordinating all environmental research and development and not just that supported by the SERDP, then I think it might be a vehicle for establishing and promulgating tech-based activities throughout the Federal Government.

I did not mean to imply that the funding allocated to the SERDP alone would accomplish that purpose. But by coordination and sharing of information. it might ultimately achieve that purpose simply by sharing.

Senator GORE. Back to the intelligence data for just a moment. What type of assistance, Dr. Osterman, do you feel the SERDP program needs to facilitate the transfer of information between the intelligence community and the environmental research community?

Dr. OSTERMAN. Well, at the moment I do not feel it needs any help. Colonel Aufderhaar has been interacting extensively with the intelligence community, particularly that part that is dedicated to overhead surveillance. And these folks are willing to cautiously come to the table with security measures foremost in their mind, of course. But I have been impressed by their willingness to contribute to the SERDP. So I do not feel there is any particular additional action that needs to be taken.

Senator GORE. All right. I would welcome the opportunity to share a dialogue with you and any other members of the SERDP Board who wish to participate, because I really believe this is one of the most fruitful areas that can be pursued.

Dr. Osterman, you have been named the SERDP executive director. Will you have the opportunity to hire technical staff as provided in the Defense Authorization Act?

Dr. **Osterman**. I believe that will be the case in fiscal year 1992, Senator. As I mentioned in my testimony, it was not until late January and February that the Department completed their analysis of the situation and decided that we would create an investment strategy. At that time—in fact, at the moment, the planning effort within the Department of Defense is being taken, if you will, out of the hide of the services. The planning effort is being entirely done on a part-time basis within the Army, Navy, Air Force, and the Office of the Secretary.

Senator **Gore**. Well, you are the one who has been put in charge of it. Are you going to be handling it in addition to all of your other current duties without any staff designated to help you administer the program?

Dr. **Osterman**. It is my hope that in the out years and in fiscal year 1992, when funds become available, the technical staff can be hired to assist in managing the program.

Senator **Gore**. Well, are you not going to—I mean, I thought the program was going to be up and operating as of fiscal year 1992. We thought it was going to start up in fiscal year 1991, but I understand from the statements today that this is going to be what some coaches call a "rebuilding year," and you are going to be ready to get off the mark in fiscal year 1992.

Dr. **Osterman**. Yes.

Senator **Gore**. But what I hear you telling me is, you are not even going to hire anybody to help you plan it until the beginning of fiscal year 1992.

Dr. **Osterman**. The key to the hiring of the staff is to have the funds available to support the program. And the current position within the Department is that we must produce an integrated tri-organizational plan before those funds become available. Once those funds become available, that would be a high-priority issue for me.

In the interim, let me please acknowledge that Under Secretary Tuck has assigned one full-time person from the Department of Energy to the Pentagon to assist in managing the program. To his credit, that is the only full-time person currently available to help with the program, and it has been most helpful and most appreciated.

Senator **Gore**. Who is that?

Dr. **Osterman**. The individual is Mr. Carl Cooley, a employee of the Department of Energy.

Senator **Gore**. All right. Now, what is the holdup on the plan?

Dr. **Osterman**. I do not perceive there to be any holdup on the plan. And after the initial meeting of the Council currently scheduled for May 30, I anticipate that all three organizations will come together and join in the development of a technical plan—a technical investment strategy.

Senator **Gore**. You had a technology called the superconducting magnetic energy storage technology that many energy experts felt was extremely promising for solving the thorny and strategic problem of storing energy. What happened to that?

Dr. Osterman. I do not have firsthand knowledge, Senator. I would have to take that for the record. That program was accomplished by the Defense Nuclear Agency, and to the best of my knowledge, funds were removed because of higher-priority issues; however, I would like to respond in more detail on the record.

Senator Gore. That will be fine.

[The information follows:]

Superconducting Magnetic Energy Storage Program

The DOD terminated its involvement in the SMES program. The DOD was originally interested in the system as one of many alternatives to provide power to laser weapon systems developed by SDIO and Army. The systems related to SMES have been delayed due to changing world conditions and budget constraints. Therefore, the DOD requirement for a SMES does not fall into the Future Year Defense Plan.

Senator Gore. The scuttlebutt is that SDI lost interest in it and it was immediately canned at that point, notwithstanding the fact that many felt, at least, that it had important implications for energy storage as a technology that might be transferred to the civilian area.

I have some other questions which I will ask for the record. I will seek guidance on whether the Chairman wants to adjourn for the vote. I hate to ask you all to stay, but please do. We have a vote on the floor which I am going to go attend, and then the Chairman has indicated that he could have more questions. I anticipate that will be forthcoming.

What I would like to do, with your indulgence—all of you—is, personally, I would like to thank all of you for coming here. I feel strongly about how important this program is. I want to do everything I can to help it work out well for the country's best interest, and I look forward to a continuing dialogue with all of you on it.

And with that, let me just say that we will stand in temporary recess for a few minutes, and then the Chairman will bring us back in or adjourn, one or the other.

[Recess.]

Chairman Nunn. Rather than keep you all waiting, I will ask the rest of the questions for the record if you do not mind. Keep up the good work. We appreciate it.

This committee stands adjourned.

[Questions for the record with answers supplied follow:]

Questioms Submitted by Senator Sam Nunn

Senator Nunn. The Department has not yet completed a research program plan for consideration by the SERDP Council. Mr. Tuck, when do you anticipate the DOE will complete its plan, and can you give us any indication of what the DOE plan will address?

Mr. Tuck. The Department of Energy (DOE) will not develop a separate implementation plan, but will instead work within the interagency framework developed by the SERDP Council.

The first meeting of the SERDP Council was held May 30, 1991. The purpose of the meeting was to: (1) define the long-term goals and near-term objectives of SERDP; (2) establish program priorities for a single integrated Department of Defense (DOD), Department of Energy, and Environmental Protection Agency (EPA) 5-year plan; (3) and provide guidance to the three agencies on input to the plan. It is intended that the plan be developed and approved by the Council by October 1, 1991.

DOE-sponsored research proposals will be developed and submitted through the integrated framework currently being finalized by the SERDP Council. The Council will review the proposals submitted by each agency, separate them into broad technology needs, and prioritize the proposals within each needs group. The three needs groups, or "thrust areas," are: (1) environmental restoration; (2) pollution prevention; and (3) environmental conditions and evaluations. These thrust areas will provide the basis for assembling the coordinated SERDP Plan. The SERDP Council will select those proposals with the highest likelihood of addressing the defense-related environmental concerns of DOD, DOE and EPA. Proposals over $1 million will be peer reviewed by the Science Advisory Board prior to funding. It is anticipated that DOE will provide the SERDP Council with its proposals by mid-June.

AIR FORCE SERDP EFFORT

Senator **Nunn**. Dr. Osterman, one of the members of the Council is the Assistant Secretary of the Air Force responsible for matters pertaining to space. This position was chosen to facilitate the link between the intelligence community and environmental change research community. What involvement has the Air Force had with the SERDP program? What steps has the Air Force taken to identify and declassify existing data relevant to global environmental research?

Dr. **Osterman**. The Air Force has had vital and intensive involvement in SERDP investment strategy planning. The Air Force has proposed initiatives for SERDP funding to identify existing data which may be relevant to global environmental research and to review those data for potential sanitization or declassification.

Senator **Nunn**. Dr. Osterman, I understand that at least one Air Force Laboratory, the Geophysics Laboratory identified a number of proposed tasks to enhance ongoing environmental measurements and to transfer critical data bases, analytical models and computer codes to the research community and to create user interfaces where appropriate. What is the status of the Geophysics Laboratory proposals?

Dr. **Osterman**. Proposals from the Geophysics Division of the Air Force Phillips Laboratory have been reviewed and are being considered in DOD/DOE/EPA SERDP investment strategy planning.

KUWAITI OIL FIRE EFFECTS RESEARCH

Senator **Nunn**. The Defense Nuclear Agency (DNA) has recently entered into a joint initiative with the National Science Foundation in conjunction with the National Geographic Society to mount a scientific collection exercise, exploiting the unique, albeit unfortunate, Kuwaiti oil fire situation. DNA had originality sought funds from the Strategic Environmental Research and Development Program to carry out the initiative, however, because these funds were unavailable, and the collection had to begin immediately, DNA reprogrammed fiscal year 1991 program funds, approximately $1.2 million to carry out the project. Eight hundred thousand dollars of the funds are being used to support the NCAR aircraft, a specially equipped research airplane. The effort began yesterday. Once the data is gathered, additional resources will be needed for data analysis. Dr. Osterman, do you anticipate that there will be funds available in fiscal year 1991 to relieve some of the financial burden on DNA for this effort and to provide assistance with the data analysis?

Dr. **Osterman**. I anticipate that SERDP funds will be made available upon the presentation of a suitable coordinated DOD/DOE/EPA plan to the Secretary of Defense. I expect these funds to be available in fiscal year 1992. DNA has not submitted a proposal for fiscal year 1992 SERDP funds for Kuwaiti Oil Fire Effects Research.

SERDP FUNDING

Senator **Nunn**. Dr. Osterman, Section 1604 of the National Defense Authorization Act for Fiscal Year 1990, requires DOD to submit a report "describing the effect on military preparedness of making" DOD funds available to other Federal agencies. This report must be submitted to the congressional defense committees not less than 30 days prior to the transfer. Did DOD prepare such a report before the $30 million was transferred to DOE?

Dr. **Osterman**. P.L. 101-511, specifically section 8089 of the Fiscal Year 1991 Defense Appropriations Act, directed the transfer of $30.0 million to the Department of Energy "solely for the final decontamination and decommissioning of the Nuclear Fuel Facility, Apollo, Pennsylvania." In accordance with the law, the Department has transferred the funds to the Department of Energy. The Department inadvertantly overlooked submitting a report prior to the transfer but will be submitting one shortly.

GREYWATER; BLACKWATER

Senator **Nunn**. In your prepared remarks you indicate that development of greywater and blackwater treatment systems is a high priority research item for the Navy. Could you first define blackwater and greywater and identify the specific nature and magnitude of the problem?

Miss **Schafer**. Blackwater (sewage) is defined as waste of human origin from water closets and urinals.

All surface ships have the capability to collect sewage when transiting the restricted zone, which extends 3 nautical miles seaward from the U.S. coast. When Collection, Holding and Transfer (CHT) equipped ships are either pierside or anchored in the harbor, they are able to offload sewage through a deck discharge connection to a pier or barge when available. Once the sewage is off the ship, it is processed by a municipal wastewater treatment plant.

Greywater is defined as waste from other than human origin which originates from sinks, showers, laundry, lavatories and food service areas.

Even though there are no Federal regulations against greywater discharges from ships, more than 90 percent of surface ships have the capability to collect greywater and to discharge it ashore when pierside. Ship alteration work is currently planned to provide this capability to the remaining surface ships. Some non-Navy ports have insufficient receiving facilities for both sewage and greywater. Therefore, high priority research is required to develop new technologies for the on-board treatment of sewage and greywater since land-based technologies are incompatible with the unique physical and operational constraints of a warship.

Navy vessels are not designed to hold large quantities of greywater in transit. Our ships have far more personnel aboard than commercial vessels, thus they generate more greywater. Requiring our warships to hold greywater in transit would impact the ships' weight and cost. We are, however, researching new technologies for the on board treatment of blackwater and greywater.

Senator **Nunn**. Certain States, such as Virginia, prohibit greywater discharges. How does the Navy handle greywater in Virginia and does this differ from State to State?

Miss **Schafer**. Although 40 CFR 122.3 excludes greywater discharges incidental to the normal operation of a vessel, some States are attempting to impose water quality standards on ship greywater discharges or prohibit discharges altogether. In the Commonwealth of Virginia, the Water control Board has proposed that Navy vessels would require a National Pollutant Discharge Elimination System permit prior to discharging greywater overboard. Naval Base Norfolk policy states that greywater discharges must be minimized or avoided if possible. The Navy handles greywater the same way in all ports. Most Navy vessels have a central collection capability, and greywater is discharged to pierside receiving facilities for further processing in shore based sewage treatment facilities at Navy ports. Until ship alteration work is completed, those few ships without greywater collection capability discharge greywater overboard while in Navy ports. Since vessels have limited greywater storage capacity, they must discharge greywater overboard during transit or at locations without suitable pierside receiving facilities.

Senator **Nunn**. In some instances bilge water is considered hazardous waste and must be disposed of accordingly. I understand the Navy's activities in Norfolk alone discharge about 1 million gallons of bilge water per day that must be disposed of as hazardous waste. Miss Schafer could you provide for the record the cost associated with disposing of this material as hazardous waste?

Miss **Schafer**. A recent study determined that Navy ships berthed in the Norfolk area have the potential to generate 300,000 gallons of bilge water per day. Neither the Commonwealth of Virginia nor the Environmental Protection Agency have classified bilge water generated by Navy ships as a hazardous waste.

The States of California and New Jersey regulate Navy ship bilge water as a hazardous waste, describing it as having the potential to exhibit toxic properties. In these two States during fiscal year 1990, the Navy disposed of 2,900,000 gallons of bilge water as a hazardous waste at a cost of $5,755,000.

Senator **Nunn**. Other than the oily water separator what effort is underway to treat the bilge water so that it is no longer classified as hazardous waste?

Miss **Schafer**. The Navy has been working at the State level to make the case that ship bilge water is not hazardous. We have conducted sampling and have not found constituents in the bilge in concentrations which would classify the waste as hazardous under Federal law (RCRA). Thus, the classification of bilge water as hazardous is a regulatory issue, not a technical one, which we will be addressing with Congress as part of the Clean Water Act reauthorization process. For the future, laboratory research and development is being conducted to evaluate the effectiveness of several different technologies for polishing oily water separator effluent. This will ensure that we can meet national standards for discharges from marine pollution control devices. We are evaluating some of these technologies at a pilot plant at Naval Weapons Station, Earle, New Jersey.

Senator NUNN. Does the designation of bilge water as hazardous waste vary from State to State, and what are the hazardous constituents that the States have identified that require the bilge water to be handled as hazardous waste?

Miss SCHAFER. The designation of bilge water as hazardous waste varies from State to State. Some States have yet to identify specific constituents and concentrations. For example, New Jersey classifies bilge water as hazardous without reference to constituents.

Recognizing that contaminants typically found in bilge water are in trace concentrations, the international regulatory community has focused on only the removal of oil from the bilge water. The oily water separators that are currently being installed on Navy ships have proven to be effective in meeting international standards for oily waste discharge (less than 15 parts per million).

A. IDENTIFICATION OF RESEARCH NEEDS BY THE WEAPONS LABORATORIES

Senator NUNN. What types of research needs did you identify for DOE in the research initiatives for the SERDP and what is the current status of your efforts to assist the DOE in preparation of its program plan?

Dr. HECKER. Responding to a request by DOE, Los Alamos coordinated the preparation of a program plan for the weapons laboratories that outlined a research program applying our joint capabilities to the problems identified in the legislation. Our objective was to apply the combined capabilities of the weapons laboratories, together with the experts in the Department of Defense (DOD) laboratories, to national and environmentally-related problems highlighted in the legislation. We generated some 700 ideas and concepts that might help in structuring such a joint program.

What follows is an outline of the research needs identified by us in each of the three major areas of the legislation.

Environmental Data Gathering and Analysis

In recent years, evidence has mounted that human civilization may directly affect the climate of the planet Earth. Examples are the production of "greenhouse" gases such as carbon dioxide in the combustion of fossil fuels and the depletion of atmospheric ozone by man-made chlorofluorocarbons. Clearly, the long-term security and prosperity of the U.S. depend strongly on our understanding the technical issues underlying possible man-induced climatic changes and our ability to formulate clear policy decisions—in a global context—in the management of climate change. The best tools to provide this capability are comprehensive models. Such earth system models must be based on accurate and reliable measurements of pertinent atmospheric variables and a fundamental understanding of the relevant atmospheric processes, coupled thorough computer codes that exploit fully the computational power of present and next-generation supercomputers.

The ultimate goal of this research effort would be to provide a verified capability for accurately projecting the consequences of human activities in the environment. The initial program would include three tasks:

1. Earth System Modeling and Advanced Computations.—As a long-range goal, there is a need to develop an earth systems model that couples the stratosphere, ocean, and land surface (including ecosystem behavior), permitting the simulation of the global climate and biogeochemical cycles of the atmospheric, marine, and land surface environments. There is a need to (a) improve existing atmospheric and oceanic models to treat global biochemical cycles of nitrogen, sulfur, and carbon; (b) develop a prototype global ecosystem model that represents the interplay of vegetation and hydrology on the land surface; and (c) convert existing climate system component models to high-performance (e.g., massively parallel) computers as building blocks for a full model of the earth system.

2. Utilization of Existing Data.—While a satisfactory earth systems model would undoubtedly require significant new satellite and ground-based data sets, one can extract much additional information from existing data sets. Initial research efforts can focus on (a) Improved utilization of existing satellite data, especially from DOD and DOE sensor systems. For example, the microwave data from the Defense Meteorological Support Program provides the most accurate measurement of the total water vapor content, a key parameter in understanding greenhouse warming and in unfolding other data. In addition, computational and modeling resources, in conjunction with existing high-resolution data, e.g., Advanced Very High Resolution Radiometer data, would allow the exploration of regional climatologies, thereby complementing and extending present efforts in the research community focusing on global climatologies. (b) The use of advanced laboratory techniques to extract more information from existing atmospheric and geologic samples. Advanced techniques, such as accelerator mass spectrometry and gas mass spectrometry, with their increased sensitivity, can be used to reveal details about past climates and the role of oceans (from ice cores and ocean sediments), to narrow the uncertainty in our knowledge of carbon dioxide sinks (from carbon-14 uptake by soils), and to improve our knowledge of atmospheric circulation and chemistry (from oxygen-18 and cosmogenic tracers).

3. Advanced Data Collection.—Ultimately, producing validated, reliable models would require additional environmental data sets that can be acquired only through the development and fielding of improved data collection technologies. Data sets are needed on the earth's radiation budget, cloud distribution, atmospheric properties, precipitation intensity, wind fields, sea surface state, and many other climatic variables. There exists a need for improved laser-based remote sensing instrumentation, with an emphasis on field robustness and minimal attendance operation. For example, LIDAR (light detection and ranging) would provide high-resolution, high-accuracy profiling of key atmospheric constituents such as water vapor, ozone, aerosols, and clouds. Also needed are advanced instruments for small satellites and aircraft platforms to obtain critically needed earth radiation budget data. These instruments include multispectral imagers, spectrometers, and radiometers. They would complement the NASA Earth Observing System (EOS) and DOE's Atmospheric Radiation Measurement program and Computer Hardware, Advanced Mathematics, and Model Physics climate programs. Development and testing of the advanced sensors can be accomplished by taking advantage of recently developed small satellite technology (DOE and DOD-sponsored), DOD booster (e.g., Pegasus) and launch facilities, and opportunities to fly on existing and new DOD aircraft platforms (e.g., a remotely piloted vehicle). Lastly, there is a need for ground support facilities for the new climate monitoring instruments described above. These include facilities for test and integration of the instruments onto the host platforms; calibration facilities (both laboratory and field); and ground data acquisition, processing, and distribution over high-speed (Gbit/sec) data communications links.

Environmental Compliance and Advanced Energy Technologies

With an annual energy bill of $10 billion and consumption of 1.85 quads (1/3 billion barrels crude oil), the DOD is the largest energy user in the Federal Government, accounting for 81 percent of Federal energy consumption. Present DOD energy consumption is divided between facilities (30 percent) and operations (70 percent). Two important areas of concern stem from the large amount of DOD energy consumption: energy security and environmental impact. Like the civilian sector, military facilities rely heavily on imported petroleum. Land-based vehicles rely exclusively on petroleum-derived fuels, as do many stationary diesel electric generators. Compliance with Clean Air Act requirements is required to reduce the environmental impact of the DOD facilities. At the same time, reduction of energy consumption through improved energy efficiency and adoption of alternative technologies are required to reduce reliance on petroleum.

Many defense sites, including bases, munitions production facilities, repair facilities, and the like, are not in complete compliance with current laws governing the emissions of energy using and producing devices. Furthermore, it is reasonable to assume that, in the future, more and more stringent regulations will be developed, raising further the cost of compliance. Many energy technologies developed during the past two decades can be applied to accelerate the rate of compliance at DOD sites.

An emphasis can be on repowering defense sites using clean and efficient domestic energy sources. A major objective of the near-term technology implementation efforts would be to demonstrate the feasibility of making a significant positive impact on DOD on-site energy use and environmental compliance by the early application of low-risk energy supply and utilization technologies now in development. A need is to initiate load reduction and generation augmentation using advanced technologies to reduce both petroleum consumption and environmental impact. The focus can be on high-return, low-risk paths to obtaining operational experience in a variety of applications and conditions.

Where feasible, conventional stationary power supply systems requiring replacement or augmentation can be identified and analyzed to ascertain their power and reliability requirements, cost of energy generated, and the best match to non-petroleum based technologies, including solar thermal, wind, photovoltaics, geothermal (including geopressure and hot dry rock), and alternative fuels.

Improved efficiency and the conversion of DOD ground transportation systems (primarily diesel trucks) and stationary diesel engines to operate on alternative fuels is another low-risk candidate, although the impact on logistics must be carefully evaluated. Such a program could leverage a project for improving the efficiency of diesel engines being proposed by the Defense Advanced Research Project Agency. Advanced intelligent control technology and novel exhaust after-treatment systems can be implemented to enable clean, highly efficient engines to be employed. Some of these technologies are now being developed in ongoing joint DOE/DOD/industry-supported R&D programs. These initiatives could be closely coordinated with U.S. engine manufacturers through technology alliances.

Through efforts such as these, the DOD facilities can become highly efficient use-centers, exceeding compliance with environmental standards while using substantially more domestically derived energy.

Technologies for Environmental Cleanup

Environmental cleanup at many defense sites is required for compliance with applicable Resource Conservation and Recovery Act; Comprehensive Environmental Response, Compensation, and Liability Act; and other laws. It is a massive national problem. Even though both DOD and DOE have large programs addressing this problem, more work toward developing more effective methods is needed. The problems at defense sites include cleanup and disposal of conventional, chemical, and biological munitions; propellants; mixed hazardous and radioactive waste; and groundwater and soil contamination from fuels, propellants, solvents, and metals. Bringing underground contaminants to the surface for treatment is often difficult, excessively expensive, or ineffective. To date, however, most attempts at *in situ* treatment or destruction of underground contaminants have been unpredictable or ineffective because the relevant subsurface processes and their interactions have not been properly understood or utilized.

A highly integrated program is needed involving the development of risk-based decision management tools; technologies that minimize the generation of waste (waste minimization); technologies for treating hazardous and mixed waste (waste treatment); advanced technologies for cleaning up soil and groundwater (environmental cleanup); and cross-cutting instrumental measurement methodologies (instrumentation) usable for waste minimization, waste treatment, and environmental cleanup. These technologies can be validated through demonstrations at selected defense sites.

An initial research effort could include an interdisciplinary program in waste minimization designed to eliminate or drastically reduce wastes such as organic compounds, solvents, ozone-depleting materials, and heavy metals. A waste treatment program would provide methods for treating hazardous organic and inorganic wastes (and mixed wastes) by a combination of available or developing methods, thereby reducing the concentration or volume that must be disposed of. The objective of an environmental cleanup program could be to develop and demonstrate new technologies and engineering tools to deal with localized, relatively deep subsurface contamination problems, particularly organic pollutants. Finally, an instrumentation program seeks to develop new instrumental methods for real-time, remote, long-term monitoring and on-site chemical analysis, leakage detection, plume extent mapping, and site characterization.

As an example of a waste treatment program, microbial and plant cell technologies have been developed for treating explosively contaminated water (pink water). The Indianhead Naval Ordnance Works discharges liquid wastes from the manufacture of torpedoes and other ordnance. These waste streams are difficult to treat, expensive to dispose of, and appropriate for biotechnology treatment. Bioreactors can be designed for the digestion of waste by bacteria specifically cultured for the waste stream. Instrumentation can be developed for monitoring the process and any airborne liquid effluents. As another example, supercritical water oxidation can be used for propellant disposal and the treatment of organically contaminated liquid. These problems exist at many DOD facilities including the Pueblo Army Depot, Picatinny and Badger Ordnance Works, and Tinker and Hill Air Force Bases. Cover technologies, already being tested at Hill Air Force Base, could be expanded to other facilities.

B. STATUS OF EFFORTS—ASSISTANCE FOR DOE PROGRAM PLAN

We have continued to support the Department of Energy in developing a comprehensive response to the SERDP legislation. Following the May 14, 1991 hearing, we met with DOE representatives and representatives from other multiprogram DOE laboratories to generate a more detailed program plan for the first meeting of the SERDP Council on May 30, 1991.

[Whereupon, at 4:52 p.m., the hearing was adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEARS 1992 AND 1993

TUESDAY, JUNE 18, 1991

U.S. SENATE,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

SUSTAINING AND ENHANCING THE NATION'S INDUSTRIAL BASE AS IT SUPPORTS THE NATIONAL SECURITY

The committee met, pursuant to notice, at 2:10 p.m. in room SR-222, Russell Senate Office Building, Senator Sam Nunn (chairman) presiding.

Committee members present: Senators Nunn, Exon, Levin, Bingaman, Dixon, Warner, Thurmond, Lott, and Coats.

Committee staff members present: Andrew S. Effron, general counsel, Daniel G. Sakura, research assistant.

Professional staff members present: John J. Hamre, William E. Hoehn, Jr., David S. Lyles, Michael J. McCord, and William H. Smith.

Minority staff members present: Jonathan L. Etherton, and George W. Lauffer, professional staff members.

Staff assistants present: Camden Jones Flick and Cindy Pearson.

Committee members' assistants present: Andrew W. Johnson, assistant to Senator Exon, William J. Lynn, assistant to Senator Kennedy, John P. Gerhart, assistant to Senator Bingaman, Charles C. Smith, assistant to Senator Dixon, Samuel D. Adcock, assistant to Senator Lott, Eric H. Thoemmes and Philip E. Thoden, assistants to Senator Coats, Thomas L. Lankford, assistant to Senator Smith, and Richard W. Fieldhouse, assistant to Senator Levin.

OPENING STATEMENT OF SENATOR SAM NUNN, CHAIRMAN

Chairman NUNN. The hearing will come to order.

The committee meets today to receive testimony on the current and future status of the U.S. industrial base to support our national security needs in light of the changing military threat and global industrial trends that are now underway. The health and strength of the national industrial base, in particular that sector which supports the national defense, must be one of America's top priorities.

Our Nation, in collaboration with our allies, has just won an overwhelming victory in the Persian Gulf, and we celebrated that victory here in Washington only a few days ago. As Norm Augustine recently said in a Wall Street Journal article, it was the technologies of the 1970s, coupled with the manufacturing of the 1980s, and the men and women of the 1990's that gave us that victory.

Now, many fear that through neglect or inaction we will allow our industrial base to diminish to the point that we may find it difficult to respond to future threats. Under the proposed budget, the Air Force will spend the bulk of this decade with no fighter aircraft in production. The Army will not produce any ground combat vehicles for the next 10 years. The Army will terminate production of heat-seeking missiles with less than half of its inventory goals met and with no concrete plans with a follow-on program. Across the board, major weapons systems are being terminated with follow-on systems scheduled to come, in terms of production, 8 to 10 years later.

The question we face this year is what kind of an industrial base will we have in the second half of this decade, and will that industrial base be adequate to support fielded weapons systems and develop future generations of weapons systems?

The Joint Chiefs, in their annual military net assessment for 1991, also voiced their concern over the future of the U.S. defense industrial base. They said that "There are concerns about the continued vitality and responsiveness of our resource base and our ability to compete with foreign countries. The size and structure of the relevant industrial base is driven by defense investments, but the defense program will decline by 10 to 12 percent in constant dollars from fiscal year 1992 through fiscal year 1997." They go on to state, "Funding the investments in industrial research, productivity and modernization that the United States needs for the future is beyond the capability of the defense industry alone."

The leaders in the Department of Defense and those of us in the Congress cannot permit this important element of national security to unwittingly deteriorate to the point where it can no longer support national policy or national intent.

Today, we will hear from four distinguished witnesses from Government and industry. First, we will hear from Mr. Don Yockey, the Acting Under Secretary of Defense for Acquisition, who was just recently before this committee for his confirmation hearing. Joining Mr. Yockey is Adm. David Jeremiah, Vice Chairman of the Joint Chiefs of Staff. Admiral Jeremiah is the JCS individual most directly responsible for making sure the needs of the operational forces are tightly coupled with the defense acquisition process. In our letters of invitation, we asked both of these gentlemen to give us their assessment of the trends impacting the defense industrial base and what the Department of Defense is doing and plans to do to manage that process.

In our second panel, we will hear from Mr. Don Fredericksen and Mr. Paul Nisbet. Mr. Fredericksen has a distinguished career in defense, having served most recently as Deputy Director of Defense Research and Engineering for Tactical Warfare Programs. In that capacity, Mr. Fredericksen oversaw most of the major weapons systems for all of the military departments. Currently, he is the president of Hicks and Associates, a consulting firm in McLean, Virginia. Mr. Nisbet, a Wall Street financial analyst, is the first vice president for Prudential Securities, Inc. In that capacity, he has developed a reputation as a keen observer of the defense industry and especially on the financial health of major contractors in the defense industry. So we are delighted to have all of you here today.

Before proceeding with the testimony, I'd ask if my distinguished colleague from Virginia, Senator Warner, has any remarks he'd like to make at this time.

Senator WARNER. Thank you, Mr. Chairman. I join you in welcoming our witnesses and ask that my brief statement be incorporated in the record.

Chairman NUNN. Without objection, it will be.

[The prepared statement of Senator Warner follows:]

PREPARED STATEMENT BY SENATOR JOHN WARNER

Mr. Chairman, I want to commend you for convening the committee to receive testimony on an issue that is critical in light of the dramatic reductions in defense spending over the next 6 years. The health of the defense industrial base will be severely affected by the steep declines in R&D and production funding during this period.

Our committee will be forced to confront a number of issues as we preside over this process. We must ensure that we have a sufficient insight into the current state of the industries supporting defense in terms of the structure, the financial health, and the degree to which such industries are dependent on foreign sources for critical technologies, components, and subsystems. We must also develop an understanding of the market forces and economic trends shaping these industries in the current budget climate. It is only the basis of such insight and understanding that we can explore alternative courses of action.

The issues involved in the defense industrial base area are some of the most complex in the national security arena. There is a great deal of overlap with such areas as international trade, tax policy and economics. I hope today will be but the start of a series of hearings exploring these issues in depth.

Our witnesses today are the most appropriate for a kickoff hearing on these issues. Admiral Jeremiah is in a position to present the role of the defense industrial base in the joint military assessment and long-term national strategy. Mr. Yockey is the Defense Department spokesman for efforts to monitor the state of the defense industrial base and programs to manage the structural evolution over the next decade of the industries supporting our national defense.

As one of the most respected analysts of the defense industry on Wall Street, Mr. Nisbet can provide us the perspective of securities industry on the forces nob shaping the defense industry. I look forward to receiving a through tutorial from Don Fredericksen on the alternative courses of action with respect to the defense industrial base we must consider in our deliberations over the next several years.

Chairman NUNN. Before we proceed, I will enter into the record the prepared statements of Senators Dixon and Thurmond.

PREPARED STATEMENT BY SENATOR ALAN DIXON

Mr. Chairman, I would like to welcome Hon. Donald J. Yockey, Acting Under Secretary of Defense for Acquisition and Admiral David F. Jeremiah, Vice Chairman of the Joint Chiefs of Staff. I look forward to hearing their testimony on how we can sustain and enhance the United States industrial base as it supports our national security policy.

Mr. Chairman, as a member of the Senate Armed Services Committee since 1984, I have supported a strong United States industrial base. We must maintain our defense industry to ensure that it is always capable of responding to the national security requirements of the United States in whatever circumstance.

Many of my colleagues and I have been concerned over the fate of our defense industrial base. We have been amazed at the number of experts whose short-sightedness leads them to ignore totally the full and significant gravity of the "IP" word—meaning a strong industrial policy—thus allowing our industrial base to deteriorate to an alarming level. Together with our late dear friend and distinguished colleague, Senator John Heinz, I urged these experts during the consideration of the Defense Projection Act last year and again this year, to take action. But the decision-makers, led by some misguided economists, resisted our efforts and continue to do so.

Early this year, an article by Stuart Auerbach appeared in the Washington Post entitled "U.S. Relied on Foreign-made Parts for Weapons." The article said, and I quote, ". . . foreign manufacturers often were reluctant to put the Pentagon's purchase orders ahead of their regular customers without prompting from their governments . . ." Mr. Auerbach goes on to quote a senior administration official as saying, "if the foreign governments were neutral or were not disposed to help us out, we could have run into some real problems . . . we were sweating bullets over it and the military was sweating bullets."

As the crisis intensified we Americans discovered we were dependent on one country for semiconductor chips, transistors and other electronic parts. We had to go to that country's embassy for help, knowing that theirs is a country where support for military procurement runs contrary to the general philosophy of pacifism.

This situation contrasts with the support received from the Government of Canada which, by United States law, is recognized as part of the North American defense industrial base. The Canadians placed their government contracting corporation on a 24-hour, 7-day work-week to respond to our needs during Desert Storm.

The "1991 Joint Military Net Assessment," prepared by the Chairman of the Joint Chiefs of Staff, covers the U.S. technology base and industrial base. This report says in black and white what the late Senator Heinz, other Members of this body, and I have been saying all along: We are facing "the loss of sub-tier suppliers—manufacturers of sub-system components of larger systems—[this] is a threat to our ability to field state-of-the-art weapon systems on a timely basis . . ." The report further states, "at the same time, production capability in such essential sub-tier industries as machine tools, gears, optics, bearings, castings, and forgings has declined, in some cases to the point where sufficient domestic capacity may no longer exist." This analysis confirms what many of us in Congress have said for years—our defense industry is becoming too dependent on foreign sources.

I ask my colleagues for their support of a policy to ensure that the United States defense industrial base remains second to none.

Thank you, Mr. Chairman.

PREPARED STATEMENT BY SENATOR STROM THURMOND

Mr. Chairman, during the Armed Services Committee hearings over the last 5 months, one of the concerns most frequently expressed has been the status of our defense industrial base. This concern has been mirrored in my constituent mail over the same period. These problems are not new to us. In fact the industries such as the ammunition manufacturers have voiced this concern for some time. What is new is that such industries as the microchip manufacturers, the producers of the Meals Ready to Eat and the textile industry are now being faced with a declining demand.

Mr. Chairman, today's hearing is timely and will be beneficial as the committee prepares for mark-up of the fiscal year 1992 Defense Authorization bill. In my judgment, Desert Shield demonstrated that the Nation's defense industrial base is on the margin. The decisions we make in regard to procurement, and research and development programs in the authorization bill will be life and death decisions for some of our manufacturers. I trust we will keep that fact in mind as we consider the defense budget during the next 2 months.

Mr. Chairman, the scarcity of resources is only one of the problems contributing to the decline of our defense industrial base. Another is the cost of doing business with the government. In my judgment the complexity of the regulations and specifications and the uncertainty of defense contracts are discouraging companies from doing business with the Defense Department. I hope we can get some relief in these sectors and rely more on standard commercial business practices.

Mr. Chairman, I join you in welcoming our panels. They each share an interest in the preparedness of our defense industrial base and will provide the committee with insights that can assist us as we deliberate on the authorization bill.

Thank you, Mr. Chairman.

Chairman NUNN. Secretary Yockey, we are glad to have you testify before the committee today, and we look forward to hearing your neat and simple answer to this perplexing question. Not really, but we do look forward to hearing from you, and we want to hear your views because I know you have done some thinking about this issue.

STATEMENT OF HON. DONALD J. YOCKEY, ACTING UNDER SECRETARY OF DEFENSE FOR ACQUISITION, DEPARTMENT OF DEFENSE

Mr. YOCKEY. Thank you, Mr. Chairman and members of the committee. I am pleased to appear before you today to discuss the defense industrial base.

I appreciate the opportunity to discuss an issue that is of such importance to the Congress and to the Department of Defense, and I am particularly pleased to share this forum with Admiral David E. Jeremiah, the Vice Chairman of the Joint Chiefs of Staff.

As you will recall, he has discussed these topics with you before, and with the committee's permission, it is appropriate that he follow up by first giving you his assessment of the new strategy and its implications for the industrial base. Then I will continue with my remarks, if that is acceptable to you, sir.

Chairman NUNN. That will be fine. Admiral?

STATEMENT OF ADM. DAVID E. JEREMIAH, USN, VICE CHAIRMAN OF THE JOINT CHIEFS OF STAFF, DEPARTMENT OF DEFENSE

Admiral JEREMIAH. Yes, sir. Mr. Chairman, I am happy to have the opportunity to appear before you today with Mr. Yockey. As you know, we have been partners in wrestling with tough defense requirement and acquisition matters in the face of a rapidly changing world; he, in his capacity as Chairman and me, as Vice Chairman of the Defense Acquisition Board. My remarks therefore serve as a precursor to Mr. Yockey's discussion.

I would like to address the impact of planned force reductions on our defense industrial base and on the future ability of that base to support our new defense strategy. The basis of my statement is the 1991 Joint Military Net Assessment, and especially Chapter 5, dealing with force reconstitution potential.

I want to discuss how our defense industrial base is related to our ability to reconstitute military forces in the event of a future emergency. I will highlight some trends that could undermine the ability of our defense industrial base to meet our future requirements, and then I will suggest some actions that need to be taken to address this issue, certainly not a comprehensive list, and not as clean as all of us would like.

Secretary Cheney and General Powell have both presented previous testimony about our new defense strategy. I elaborated on that strategy and the force structure and the force packages that were included within it before this committee last month.

The most important new element of this strategy is the shift in focus from a global Soviet threat to regional contingencies, and our current defense program reflects this shift in strategic focus. So the force packages that we came forward to you with in the budget, reflected, as I indicated in my previous testimony, an evolution from national objectives stated by the President and strategic objectives stated by the Secretary to strategic concepts, and finally the force packages of strategic Atlantic, Pacific and contingency forces that we presented to the Congress of the United States.

It was a very carefully balanced program, fully cognizant of the resources that were allocated to the Department of Defense, and as we have worked through this budget process, we have had to be very careful that we do not change the balance so radically that we cannot recover in the process of trying to bring ourselves down to a smaller and different force.

We anticipate that future regional contingencies will arise on short notice and will be limited in scope and duration. That was the case in our confrontation with Iraq, though there we had the unusual good fortune in that Saddam Hussein granted us nearly 6 months in which to mobilize, deploy, and prepare our forces. I doubt that future people in his position will give us that opportunity, if they can prevent it.

Even in the Persian Gulf War, most of the items to support the conflict came from the war reserve stocks, and did not rely on surge production from our industrial base to any great extent. Therefore, for this strategy, it is important to pay attention to what is in the budget and what is in the war reserve stocks and relate that to the contingency operations.

We think that will be true for future regional conflicts as well, as long as we make adequate provision for war reserves. But unlike many other elements of our revised strategy, reconstitution is not focused on regional contingencies. Reconstitution is instead a national insurance policy which will allow us to build new forces in time should the Soviet Union, or some other nation, begin to emerge as a global threat to the United States.

That circumstance clearly will not arise overnight, in a few months, or perhaps even in a year or more, now. Therefore, we will have time to reconstitute the necessary forces, provided we have the infrastructure on which to build them, and provided, too, that the administration and the Congress are able to take the necessary steps to begin reconstitution in a timely fashion, and that probably needs some very tight coordination between us and agreement on the indicators that would precipitate action necessary to begin stepping up our graduated military response to a global war.

Any future expansion of our military forces will require manpower, technology, and the industrial base. While our defense industrial base is not the only element of reconstitution capability, it is a crucial one. In large measure, this is because the industrial base itself is virtually impossible to reconstitute in a timely fashion if it is allowed to completely wither away.

Our existing industrial base is adequate for our current defense needs. However, we have concerns about the continued vitality and responsiveness of this base to support future reconstitution efforts.

To a great extent, the size and composition of our defense industries are driven by the defense budget. According to current projections, the defense budget will fall to 3.6 percent of Gross National Product by fiscal year 1996, which is its lowest point in over 40 years.

Many programs will be terminated, or kept at minimum sustaining production rates. As a result, many defense contractors are already scrambling to downsize or diversify their operations. Some may close their doors, or at least cease defense-related operations. These consequences of our reduced defense expenditures raise uncertainties about our future ability to rapidly expand production.

The Office of the Secretary of Defense is specifically looking at the impact on prime contractors associated with five major categories of defense systems: aircraft; missiles and space systems; electronics; ships; and combat vehicles. Although many defense industries will feel the impact of reduced funding, some will be cushioned by their diversification and by civilian sector demand.

Though some shrinkage may occur, we project that aircraft, missile and space and electronics sectors should continue to maintain an adequate supply base and production capability. With regard to domestic shipbuilding, the commercial demand has all but disappeared, and the industry relies on DOD for its survival today. Current budget projections show substantial decline in naval ship construction after current orders are completed. At this reduced rate of production, it will be difficult to sustain even the current base.

With respect to combat vehicles, today there are only a few firms which are capable of meeting DOD needs. Two major programs, the M1 Abrams tank and the Bradley Fighting Vehicle, are scheduled for termination, though export sales and repair parts will keep production going for a limited period. We also plan to introduce a new family of armored vehicles in the future. In the meantime, there may be some erosion in this sector, especially with respect to lost technical labor skills.

Major contractors will not be the only ones who are affected by our budget reductions. Subtier suppliers—the manufacturers of subsystem components of larger systems—will also be hit hard. In many cases, the subcontractors are smaller and less diverse operations, and so will be even less able to survive than major contractors. Production capability in essential subtier industries such as machine tools, gears, forgings, castings, optics and bearings, has already declined to the point where domestic capability to support rapid reconstitution may no longer exist. Because DOD does not deal directly with these suppliers, we lack complete information on them, and that makes it difficult to quantify this problem in detail. But we know it exists.

As the defense budget declines, the tendency toward foreign sourcing increases as U.S. manufacturers look to cut costs. We have already become dependent on foreign sources for some key components. As the trend toward international economic interdependence and globalization continues; some foreign sourcing is inevitable, and I do not think we should oppose that. We do have, however, some prudent concerns that we have to examine as we continue to see the world increasingly move towards global supply of product.

First, many foreign governments exercise considerable control over their economies and producers. Our future dependence on foreign sources could give these governments undesirable political leverage that might be used in a manner detrimental to U.S. national interests.

Second, as technology and product development continue to migrate off-shore, research and development capability go with them. We then find ourselves in the position of indirectly subsidizing foreign R&D with our defense dollars—a circumstance potentially detrimental not only to our defense technologies, but also to our economic competitiveness in those areas where there are commercial spinoffs.

Strict insistence on domestic sources for U.S. defense systems is neither possible nor prudent. In fact, we think we reap many economic benefits from worldwide sourcing, but regardless of the source, the United States has to find ways to maintain access to needed materials, production capacity, and scarce technologies. We have to be able to monitor our reliance on foreign sources, and be able to react before such reliance becomes a vulnerability.

Future reductions in our defense industrial base are certain to occur. This will adversely affect our ability to mobilize our industries in the event it becomes necessary to reconstitute forces. What are we to do to ensure that we preserve the essential capabilities?

First, we think that in the Department we need to institutionalize the concept of reconstitution into our defense planning guidance and specify our reconstitution requirements. We have taken the first step in this process by making reconstitution one of the key elements in our new defense strategy.

Second, we need to better understand the defense industrial base. We have efforts underway to do this. We have made an analysis of the industrial base part of the acquisition strategy for major defense acquisition programs, and will review it at each decision milestone that Mr. Yockey and I participate in. We are also working on a directive that requires the services and the Defense Logistics Agency to conduct industrial preparedness planning on critical items, and to assess budget impact on the defense industrial base. With those assessments, we will monitor the ability of the industrial base to meet our reconstitution requirements once they are defined. In those instances where we fall unacceptably below our requirements, we should develop acquisition or investment strategies to correct the situation.

Third, and probably most important, we need to look at alternative ways of doing business. I do not endorse continued production of unwanted or unneeded systems solely to prop up the existing industrial base. In fact, this is probably the worst way to maintain capability and our competitive posture in the world. One alternative may be to rely more on the commercial sector. This means using commercially available items when we can, and decreasing the use and stringency of military specifications. In effect, this will broaden the definition of our defense industrial base by incorporating more commercial industrial capacity into our reconstitution assets where that is possible.

That is not necessarily possible for end items like major tanks and fighter aircraft, and it also increases the amount of foreign components, necessarily, in our equipment, and it will complicate, to some degree, our logistics systems in supporting those major end items when they are in their 10th, 15th, and 20th year of service life.

Chairman NUNN. Admiral, if I could interrupt you on that point. I think this is enormously important, probably the most important part of a new effort on the industrial base, but for other reasons this is almost exactly what the Packard Commission recommended 4 or 5 years ago.

I think it is very important in this industrial base analysis and I agree with the principle, but how are you going to do that? You are really talking about changing the culture of military procurement, because you have got thousands and thousands of people over there whose job it is to write military specifications and thousands and thousands of other people whose job it is to see if they have been complied with.

Admiral **JEREMIAH**. And thousands and thousands of people over here making sure we do both of those things. [Laughter.]

Chairman **NUNN**. Exactly. Not as many over here, but we have got a few hundred well-placed, anyway.

How do you propose to do that?

Admiral **JEREMIAH**. If you will, I think Mr. Yockey is going to address that, in part, in his testimony, if we could defer that until that point.

Chairman **NUNN**. If we are going to get an answer on it, I will defer.

Mr. **YOCKEY**. I will be sure to answer that question, but I will have to do that after my testimony, because I did not incorporate it in my testimony. I will be happy to discuss it.

Admiral **JEREMIAH**. We think that another way of maintaining capability could be greater use of prototypes. Prototypes could be used to advance technology without the higher cost of volume production, or to develop military hardware that could be quickly produced. A related approach is to have more numerous but smaller production runs to maintain diversified capabilities, but these choices in turn make it difficult for industry to recover their R&D and tooling costs. There are no simple answers to this, and this is an area that is going to require innovative thinking and new approaches to ensure that we can preserve our essential industrial capabilities within our budgetary constraints.

Fourth, we seek new technologies by ensuring robust research and development. Product improvement, modernization, and innovation all stem from R&D. We must put the best available weapons and supporting systems in the hands of our warriors. Our experience in the Persian Gulf reaffirmed the utility of advanced weaponry in modern combat.

We need to keep in mind, however, that the technology used in Desert Storm was mostly developed in the 1970's or earlier, produced in the 1980's, and used in the 1990's, and I use that quotation without embarrassment, because I said it and Norm Augustine lifted it and used it in his article. [Laughter.]

But the rate of technological innovation is accelerating every day, especially in information and data processing systems. We need to figure out how we can introduce new technologies in a more timely fashion so that our forces will not have to fight with systems that are technologically inferior to those of some future adversary.

As we transition to a smaller force, we will stress the need to have high-quality weapon systems that can perform in a variety of roles and missions. Though we are challenged in some areas by foreign competitors, the United States still holds the lead in the laboratory for many critical technologies. Of concern is our failure to retain a position of leadership in those fields that translate the fruits of research into usable end products. This is a national problem extending beyond the defense industry alone. But we must all do our share to make the investments necessary to climb back on top in this area of industrial productivity.

In summary, reduced defense spending is a reality. It will have some adverse effect on our defense industrial base. We need to set reconstitution requirements so that we can measure our assets against those needs, and then we must monitor our defense industries carefully to ensure we do not lose our essential capability to reconstitute military forces.

Mr. Chairman, thank you for giving me this opportunity to speak to the committee this afternoon. I think, if possible, have Mr. Yockey make his remarks, and then we will be prepared to answer questions.

[The prepared statement of Admiral Jeremiah follows:]

Prepared Statement by Adm. David E. Jeremiah, USN, Vice Chairman, Joint Chiefs of Staff, Department of Defense

Mr. Chairman, I am pleased to have this opportunity to appear before you today. My remarks will address the impact planned force reductions will have on our defense industrial base, and on the future ability of this base to support our new defense strategy. The basis of my statement is the 1991 Joint Military Net Assessment, and especially Chapter 5 dealing with force reconstitution potential.

First, I will briefly review the new defense strategy. Then I will discuss how our defense industrial base is related to our ability to reconstitute military forces in the event of a future emergency. I will highlight some trends that could undermine the ability of our defense industrial base to meet our future requirements. And then I will suggest some actions that need to be taken to address this issue.

Secretary Cheney and General Powell have both presented previous testimony about our new defense strategy. I myself elaborated on our new strategy and force structure before this committee last month. As you will recall, Mr. Chairman, our new military strategy has several key elements. Among these elements are: our worldwide alliance system protecting our interests and those of our allies in critical areas of the globe; forward-deployed U.S. forces, which give strength and credibility to those relationships; the ability to respond to regional threats with mobile-forces and long-range power projection; maritime and aerospace superiority; the capability to reconstitute forces to meet a new or resurgent global threat; and the need to maintain a strong strategic deterrent capability and to enhance strategic defense.

The most important new element of this strategy is the shift in focus from a global Soviet threat to regional contingencies. So, to size and shape our future capabilities and force structure, we are now focusing on regional threats, as well as the related requirements for forward presence and crisis response. Our current defense program reflects this shift in strategic focus.

We anticipate future regional contingencies will arise on short notice and will be limited in scope and duration. This was the case in our confrontation with Iraq, though there we had unusual good fortune in that Saddam Hussein granted us nearly 6 months of grace in which to mobilize, deploy and prepare our forces. Yet even in the Persian Gulf War, most items to support the conflict came from war reserve stocks, and did not rely on surge production from our industrial base to any great extent. This will probably be true for other regional conflicts in the future as well.

Unlike many other elements of our revised strategy, however, reconstitution is not focused on such regional contingencies. Rather, it is our "national insurance policy" which will allow us to rebuild forces in time should the Soviet Union begin to reemerge as a global threat. Such a circumstance could not arise overnight, or even in a few months. While the Soviet Union continues to maintain massive conventional forces, we do not believe they can conduct the traditional "theater strategic offensive" against Western Europe without a long, visible period of mobilization and preparation. Therefore, we will have time to reconstitute the necessary forces—provided we still have the infrastructure on which to build them. And provided, too, that the administration and Congress are able to take the necessary steps to begin reconstitution in a timely fashion.

Any future expansion of our military forces will require manpower, technology and the industrial base. While our defense industrial base is not the only element of reconstitution capability, it is a crucial one. In large measure, this is because the industrial base itself is virtually impossible to reconstitute in a timely fashion if it is allowed to completely wither away.

Our existing industrial base is adequate for our current defense needs. However, we have concerns about the continued vitality and responsiveness of this base to support future reconstitution efforts.

To a great extent, the size and composition of our defense industries are driven by the defense budget. And, according to current projections, the defense budget will fall to 3.6 percent of GNP by fiscal year 1996—its lowest point in over 40 years. Some key programs will be terminated or kept at minimum sustaining production rates. As a result, many defense contractors are already scrambling to downsize and diversify. Others may close their doors, or at least cease defense-related operations. In this sense, our reduced defense expenditures reduce as well our future ability to rapidly expand production.

OSD is specifically looking at the impact on major contractors associated with five categories of defense systems: aircraft; missiles and space systems; electronics; ships; and combat vehicles. Although most defense industries will feel the impact of reduced funding, the negative consequences for some will be cushioned by their diversification or by civilian-sector demand. Though some shrinkage may occur, the aircraft, missile and space, and electronics sectors should continue to maintain an adequate supply base and production capability. With regard to domestic shipbuilding, the commercial demand has all but disappeared and the industry relies on DOD for its survival. Current budget projections show substantial decline in naval ship construction after current orders are completed. At this reduced rate of production, it will be difficult to sustain even the current base.

With respect to combat vehicles, today there are only a few firms which are capable of meeting DOD needs. Two major programs, the M1 Abrams tank and the Bradley Fighting Vehicle, are scheduled for termination, though export sales and repair parts will keep production going for a limited period. We also plan to introduce a new family of armored vehicles in the future. In the meantime, there may be some erosion in this sector, especially with respect to lost technical labor skills.

Major contractors will not be the only ones affected by our budget reductions. Subtier suppliers—the manufacturers of subsystem components of larger systems—will also be hit hard. In many cases, subcontractors are smaller and less diverse operations, and so will be even less able to survive than major contractors. Production capability in essential subtier industries such as machine tools, gears, optics, bearings, castings, and forgings has already declined to the point where domestic capability to support rapid reconstitution may no longer exist. Because DOD does not deal directly with these suppliers, we lack complete information on them, making it difficult to quantify this problem in detail. But we know it exists.

As the defense budget declines, the tendency toward foreign sourcing increases as U.S. manufacturers look to cut costs. We have already become dependent on foreign sources for some key components. As the trend toward international economic interdependence and globalization continues, some foreign sourcing is inevitable and should not be opposed. In fact, some economic benefits accrue from world-wide sourcing. However, it also raises some concerns.

First, many foreign governments exercise considerable control over their economies and producers. Our future dependence on foreign sources could give these governments political leverage that might be used in a manner detrimental to U.S. national interests.

Second, as technology and product development continue to migrate offshore, research and development capability go with them. We then find ourselves in the position of indirectly subsidizing foreign R&D with our defense dollars—a circumstance potentially detrimental not only to our defense technologies, but also to our civilian economy in those areas where there are commercial spinoffs.

Strict insistence on domestic sources for U.S. defense systems is not possible or prudent. But regardless of the source, the United States must find ways to maintain access to needed materials, production capacity and scarce technologies. We must be able to monitor our reliance on foreign sources, and be able to react before such reliance becomes a vulnerability.

Future reductions in our defense industrial base are certain to occur. This will adversely affect our ability to mobilize our industries in the event it becomes necessary to reconstitute forces. What are some things we should do to ensure we preserve essential capabilities?

First, we need to institutionalize the concept of reconstitution into our defense planning guidance and specify our reconstitution requirements. We have taken the first step in this process by making reconstitution one of the key elements in our new defense strategy.

Second, we need to better understand the defense industrial base. Efforts are currently underway to do this. We have made an analysis of the industrial base part of the acquisition strategy for major defense acquisition programs, and will review it at each decision milestone. We're also working on a directive requiring the Services and the Defense Logistics Agency to conduct industrial preparedness planning on critical items, and to assess budget impact on the defense industrial base. Based on such assessments, we will monitor the ability of the industrial base to meet our reconstitution requirements once they are defined. In those instances where we fall unacceptably below our requirements, we should develop acquisition or investment strategies to correct the situation.

Third, we must look at alternative ways of doing business. I certainly do not endorse continued production of unwanted or unneeded systems solely to prop up the existing industrial base. In fact, this is probably the worst way to maintain capability. One alternative may be to rely more on the commercial sector. This means using commercially available items when we can, and decreasing the use and stringency of military specifications. In effect, this will broaden the definition of our defense industrial base by incorporating commercial industrial capacity into our reconstitution assets where possible.

Another way of maintaining capability could be greater use of prototypes. Prototypes could be used to advance technology without the higher cost of volume production, or to develop military hardware that could be quickly produced. A related approach is to have more numerous but smaller production runs to maintain diversified capabilities. There seems to be no single answer, so this area will require innovative thinking and new approaches to ensure we can preserve our essential industrial capabilities within our budgetary constraints.

Fourth, we must seek new technologies by ensuring a robust research and development. Product improvement, modernization, and innovation all stem from R&D. We must put the best available weapons and supporting systems in the hands of our warriors. Our experience in the Persian Gulf reaffirmed the utility of advanced weaponry in modern combat.

We need to keep in mind, however, that the technology used in Desert Storm was mostly developed in the 1970s, produced in the 1980s, and used in the 1990s. But the rate of technological innovation is accelerating every day—especially in information and data processing systems. We need to figure out how we can introduce new technologies in a more timely fashion, so that our forces will not have to fight with systems that are technologically inferior to those of some future adversary.

As we transition to a smaller force, we will stress the need to have high quality weapon systems that can perform in a variety of roles and missions. Though we're challenged in some areas by foreign competitors, the United States still holds the lead in the laboratory for many critical technologies. Of concern is our failure to retain a position of leadership in those fields that translate the fruits of research into usable end products. This is a national problem extending beyond the defense industry alone. But we must all do our share to make the investments necessary to climb back on top in this area of industrial productivity.

In summary, reduced defense spending is a reality. This will adversely affect our defense industrial base. We need to look closely at these consequences to ensure we do not lose our essential capability to reconstitute military forces in the future.

Thank you, Mr. Chairman, for giving me this opportunity to speak to the committee. After Mr. Yockey has made his remarks, we will be happy to answer any questions you or the other members may have.

Chairman **NUNN**. That will be fine. Thank you very much, Admiral. Secretary Yockey?

STATEMENT OF HON. DONALD J. YOCKEY, ACTING UNDER SECRETARY OF DEFENSE FOR ACQUISITION, DEPARTMENT OF DEFENSE (CONTINUED)

Mr. **YOCKEY**. Thank you, Mr. Chairman. Admiral Jeremiah's review of the strategic situation emphasized the importance of incorporating a reconstitution strategy in our planning process. I will focus primarily on other aspects of the industrial base, which we feel is also very important.

Industrial base activities managed by the Department of Defense range from: (1) the complexities of overseeing our routine peacetime business of efficiently equipping and supporting our military forces; (2) the industrial preparedness posture that is appropriate to deal with the potential and near-term regional contingencies and conflicts; and (3) the planning activities needed to meet potential production needs to reconstitute, or even further expand, our forces in response to an emerging future global threat.

Today, I plan to discuss selected industrial base issues from each of these three broad areas. I first need to emphasize that the industrial base dedicated to defense production must shrink, given the new budget realities. We will do what we can to mitigate the effects, but we cannot prevent it from happening.

Covering the peacetime posture, with regard to the situation as we now see it in peacetime, our ability to reduce our force structure while meeting our national security needs for regional contingencies demands that we maintain superior forces both through high-quality, well-trained personnel and through the excellence of our weapon systems. Operation Desert Storm demonstrated the absolute correctness of our longstanding policy of insisting on technological superiority in our weapons and thoroughly reinforces the need to preserve this policy as a key corollary to the reduced force structure.

Therefore, our long-term security requires that we sustain our capability to produce first-class weapon systems. To accomplish this, we must continue to invest in new technology. In this regard, we are committed to funding robust levels of research and development, both (a) direct DOD funding of the technological base—which is approximately $3.9 billion in fiscal year 1992—as well as (b) effort funded through the contractor Independent Research and Development Program.

The Department has increased the cap on Independent Research and Development/Bid and Proposal activity costs by 4.4 percent in fiscal year 1991, and we increased it by an additional 3.8 percent for fiscal year 1992. We approved these increases despite an overall decline in the defense budget to ensure that sufficient funds are available to enable defense contractors to develop the advanced technologies that strengthen our national security and support the industrial base.

We are providing strong support to the defense industrial base by preferentially funding technologies that are critical to the DOD's mission. The fiscal year 1991 Critical Technologies Plan that was forwarded to you on May 7, 1991, provides increased attention to manufacturing. One critical new technology, Flexible Manufacturing, was added this year to the 20 critical technologies on the prior list, to exemplify the importance of integrating technologies for the manufacturing process. In addition, the plan contains an assessment for each of the 21 critical technologies of the infrastructure relevant to supporting the industrial and manufacturing capabilities of the United States.

We are pursuing a number of actions to help improve the financial health of the defense contractors, which we feel is essential. One way that we have acted to strengthen the industrial base is by ensuring that the contracts we award to industry do not damage our contractors' financial health by inappropriately exposing them to large losses. In the past, large fixed-price development contracts on high-risk programs, while legally binding, have resulted in major financial losses for industry when unanticipated problems arose. For some time, our defense acquisition regulations have provided guidance that requires the use of cost-type contracts for risky development programs. The Department is strongly committed to fully meeting this initiative.

We also recently directed the Service Acquisition Executives to strictly limit the use of fixed-price production options to full-scale development contracts. We are able to ensure that this policy is being adhered to through the thorough review of the planned acquisition approach in milestone and program reviews of major defense acquisition programs. We have asked the Service Acquisition Executives to make similar examinations of other programs within their Military Departments.

The Defense Management Report committed the Department to a periodic review of progress payment rates in relation to interest rates and restraints on outlays. Our new progress payment policy implements this commitment. It provides for an annual reassessment of progress payment rates based on the average quarterly short-term commercial borrowing rates experienced during the preceding year. Based on this assessment, progress payment rates of 85 percent for large businesses, 90 percent for small businesses, and 95 percent for small disadvantaged businesses will be used for our new contract awards, beginning on July 1 of this year.

We are committed to maintaining sound, equitable, and stable policies that provide well-managed defense contractors the opportunity to earn reasonable rates of return in exchange for quality products. Use of award fees can be effectively utilized in this regard. Increases in the IR&D/B&P recovery rates and policy changes to allow progress payments, that I just discussed, are two key steps taken to encourage continued participation of contractors in the defense market.

Another factor we have under review is the integration of commercial and military technology. As directed by Deputy Secretary Atwood, the Department has established an aggressive agenda aimed at breaking down barriers to buying commercial items. We intend to put greater emphasis on competition in worldwide sourcing in order to obtain required items at the highest quality and lowest cost.

However, as we put greater emphasis on commercial sources, we must be mindful that worldwide component sourcing has become a fact of life. We therefore must be careful to ensure that our reconstitution goals can be met during a long period of crisis, taking worldwide sourcing into account.

The ultimate bottom line for our peacetime activities is the essential need for industry and DOD to manage our programs and resources as wisely as possible to assure that we can gain maximum military effectiveness from our declining resources.

As we reduce our force structure in response to world events, we need to ensure that we would be able to expand our force structure over a period of time to respond to some unanticipated emerging threat. This depends on how large the threat is and how fast it reemerges, as well as our inherent ability to respond starting from our planned peacetime posture.

At the front of this reconstitution spectrum, we are considering establishing stockpiles of equipment that could form the basis for bringing up additional combat units after a period of organization and training. Once all existing stocks of usable equipment were issued to new units, any further expansion of forces would require increased production of new major combat equipment, for example, armored vehicles, aircraft, and ships.

The time required for such industrial mobilization is highly dependent on the defined threat or threats and the degree to which emergency procedures are employed, to include provisions of the expired Defense Production Act. As currently postulated, our threats generally fall into regional conflicts of short-term duration and short warning times or a global conflict with a somewhat longer duration and a longer warning time.

We will engage in regional conflicts with existing stocks, including the prepositioning of war reserves. For future global conflicts, it would take many years to increase the production rate for our most complex systems to meet our needs, particularly those in development. Since we will have enough warning time, this will enable us to fight such a global conflict with the advanced technology we are currently developing, such as stealth, advanced computer technology, and other advanced technologies. This is particularly shown in the ATF and the LH programs.

What we do not want to do is to continue to produce older systems which do not include the latest technology, nor do we want to invest too much in shortening the lead times for major current equipment beyond the results that could be achieved under wartime emergency management priorities. This would be expensive, and the cost would come at the direct expense of reductions in our standing military capability. Second, this would only perpetuate technical obsolescence over time.

For these reasons, the Department is thoroughly examining all facets of how we can support the reconstitution concept before we make any major changes to our program policies.

Consistent with statute and national policy, the Department of Defense has long maintained an extensive industrial preparedness planning program to mobilize equipment, facilities, and other resources for emergency situations. A key foundation of this program has been the Defense Production Act, which grants the President important authorities for mobilizing the Nation's industrial resources for national security purposes. An important authority, contained in Title I, allows the President to order priority performance of contracts for national security purposes. The DPA expired on October 20, 1990. We were able to support Operations Desert Shield/Desert Storm because we were able to substitute the limited authorities of the Selective Service Act, and most importantly, because of the exceptional support from our many contractors.

Although the Persian Gulf conflict bore little direct relationship to our industrial planning baseline, our planning stood us in very good stead, particularly for the many items managed by the Defense Logistics Agency. It contributed to our ability to surge items that were not stocked heavily in peacetime, at least partially because we have an inherent ability to surge them in emergencies. Very few major items were surged, the newest version of the Patriot missile being a notable exception. In general, war reserve stocks of major systems were adequate to support Operation Desert Storm.

We are now in the process of updating our industrial base planning guidance, to broaden it beyond our traditional narrow focus on surge and mobilization planning. We are addressing industrial base issues more rigorously during our acquisition process, particularly in our DAB reviews. Specifically, our new Defense Acquisition Program Procedures require a specific focus on the industrial base capability to support all new major systems acquisition.

We will continue to protect a surge capability in many of our acquisition and support activities, particularly for consumable items such as munitions. Funding for these surge capabilities will be separately identified as we move toward modern and efficient methods of industrially funding many of our peacetime support activities.

In summary, we are considering the impact of planned force reductions on the industrial base during the acquisition process. The Department's overall approach is based on the best mix of current systems and new developments. In lean times, we need to make difficult decisions or we will not succeed in meeting both the budgetary goals and the planned force reductions without major problems.

We have organized our staff to integrate the full spectrum of talent to properly assess and evaluate the production base. We are continually getting better in our production base analyses, and I believe that the procedures outlined in the newly revised acquisition instructions, 5001 and 5002, will get us there along with the discipline of the DAB process.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Yockey follows:]

PREPARED STATEMENT OF DONALD J. YOCKEY, ACTING UNDER SECRETARY OF DEFENSE (ACQUISITION)

INDUSTRIAL BASE ISSUES

Mr. Chairman and members of the committee, I am pleased to appear before you today to discuss the defense industrial base. I appreciate the opportunity to discuss an issue that is of such importance to the Congress and to the Department of Defense, and am particularly pleased to share this forum with Adm. David E. Jeremiah, the Vice Chairman of the Joint Chiefs of Staff. As you will recall, he has discussed these topics with you before, and with the committee's permission, it is appropriate that he follow-up by first giving you his assessment of the new strategy and its implications for the industrial base. I will then continue with my remarks.

Admiral Jeremiah's review of the strategic situation emphasized the importance of incorporating a reconstitution strategy in our planning process. I will focus primarily on other aspects of the industrial base.

Industrial base activities managed by the Department of Defense range from: (1) the complexities of overseeing our routine peacetime business of efficiently equipping and supporting our military forces; (2) the industrial preparedness posture appropriate to deal with the potential near-term regional contingencies and conflicts;

and (3) include the planning activities needed to meet potential production needs to reconstitute, or even further expand, our forces in response to an emerging future global threat.

Today I plan to discuss selected industrial base issues from each of these three broad areas. I first need to emphasize that the industrial base dedicated to defense production must shrink, given the new budget realities. We will do what we can to mitigate the effects, but we can't prevent it from happening.

PEACETIME POSTURE

Now, with regard to the situation as we now see it in peacetime, our ability to reduce our force structure while meeting our national security needs for regional contingencies demands that we maintain superior forces both through high-quality, well-trained personnel and through the excellence of our weapon systems. Operation Desert Storm demonstrated the absolute correctness of our long-standing policy of insisting on technological superiori[illegible]n our weapons, and thoroughly reinforces the need to preserve this policy as a ke[illegible]rollary to reduced force structure.

Therefore, our long-term security requires that we sustain our capability to produce first-class weapons systems. To accomplish this, we must continue to invest in new technology. In this regard, we are committed to funding robust levels of research and development, both (a) direct DOD funding of the Technology Base $3.9 billion in fiscal year 1992—as well as (b) effort funded through the contractor Independent Research and Development (IR&D) program.

The Department has increased the cap on Independent Research and Development/Bid and Proposal (IR&D/B&P) costs by 4.4 percent for fiscal year 1991 and by an additional 3.8 percent for fiscal year 1992. We approved these increases despite an overall decline in the defense budget to ensure that sufficient funds are available to enable defense contractors to develop the advanced technologies that strengthen our national security and support the industrial base.

We are providing strong support to the defense industrial base by preferentially funding technologies that are critical to the DOD mission. The fiscal year 1991 Defense Critical Technologies Plan that was forwarded on May 7, 1991 provides increased attention to manufacturing. One critical new technology, Flexible Manufacturing, was added this year to the twenty critical technologies on the prior list, to exemplify the importance of integrating technologies for manufacturing. In addition, the plan contains an assessment, for each of the 21 critical technologies, of the infrastructure relevant to supporting the industrial and manufacturing capabilities of the United States.

We are pursuing a number of actions to help improve the financial health of our defense contractors. One way we have acted to strengthen the industrial base is by ensuring that the contracts we award to industry do not damage our contractors' financial health by inappropriately exposing them to large losses. In the past, large fixed-price development contracts on high-risk programs, while legally binding, have resulted in major financial losses for industry when unanticipated problems arose. For some time our defense acquisition regulations have provided guidance that requires the use of cost-type contracts for risky development programs. The Department is strongly committed to fully meeting this initiative.

We also recently directed the Service Acquisition Executives to strictly limit the use of fixed-price production options in full-scale development contracts. We are able to ensure that this policy is being adhered to through review of the planned acquisition approach in milestone and program reviews of major defense acquisition programs, and we have asked the Service Acquisition Executives to make similar examinations of other programs within their Military Departments.

The Defense Management Report committed the Department to a periodic review of progress payment rates in light of prevailing interest rates and restraints on outlays. Our new progress payment policy implements this commitment. It provides for an annual reassessment of progress payment rates based on the average quarterly short-term commercial borrowing rates experienced during the preceding year. Based on this assessment, progress payment rates of 85 percent for large businesses, 90 percent for small businesses, and 95 percent for small disadvantaged businesses will be used for new contract awards beginning July 1, 1991.

We are committed to maintaining sound, equitable, and stable policies that provide well-managed defense contractors the opportunity to earn reasonable rates of return in exchange for quality products. Use of award fees can be effectively utilized in this regard. Increases in IR&D/B&P recovery rates and policy changes to allow progress payment rates to change as interest rates change are two key steps that we have already taken to encourage continued participation in the defense market.

Another factor we have under review is the integration of commercial and military technology. As directed by Deputy Secretary Atwood, the Department has established an aggressive agenda aimed at breaking down barriers to buying commercial items. We intend to put greater emphasis on competition in worldwide sourcing in order to obtain required items at the highest quality and lowest cost. However, as we put greater emphasis on commercial sources, we must be mindful that worldwide sourcing has become a fact of life. We therefore must be careful to ensure our reconstitution goals can be met during a long period of crisis, taking worldwide sourcing into account.

The ultimate bottom line for our peacetime activities is the essential need for industry and DOD to manage our programs and resources as wisely as possible to assure that we can gain maximum military effectiveness from our declining resources.

RECONSTITUTION, FUTURE FORCE EXPANSION NEEDS

As we reduce our force structure in response to world events, we need to ensure that we would be able to expand our force structure over a period of time to respond to some unanticipated emerging threat. This depends on how large the threat is and on how fast it reemerges, as well as our inherent ability to respond starting from our planned peacetime posture. At the front of this reconstitution spectrum, we are considering establishing stockpiles of equipment that could form the basis for bringing up additional combat units after a period of organization and training. Once all existing stocks of usable equipment were issued to new units, any further expansion of forces would require increased production of new items of major combat equipment, for example, armored vehicles, aircraft, ships.

The time required for such industrial mobilization is highly dependent on the defined threat or threats, and the degree to which emergency procedures are employed, to include provisions of the expired Defense Production Act. As currently postulated, our threats generally fall into regional conflicts of short-term duration and short warning times or a global conflict with a somewhat longer duration and a longer warning time.

We will engage in regional conflicts with existing stocks, including prepositioning and war reserves. For future global conflicts, it would take many years to increase the production rate for our most complex systems to meet our needs. Since we will have enough warning time, this will enable us to fight such a global conflict with the advanced technology we are currently developing such as stealth, advance computer technology, etc., as shown in the ATF and LH. What we don't want to do is continue to produce older systems which do not include the latest technology, nor do we want to invest too much in shortening the lead times for major current equipment beyond the results that could be achieved under wartime emergency management priorities. This would be expensive, and the cost would come at the direct expense of reductions in our standing military capability. Second, this would only perpetuate technical obsolescence over time. For these reasons, the Department is thoroughly examining all facets of how we can support the reconstitution concept before we make any major changes to our program policies.

INDUSTRIAL PREPAREDNESS PLANNING

Consistent with statute and national policy, the DOD has long maintained an extensive industrial preparedness planning program to mobilize equipment, facilities and other resources for emergency situations. A key foundation of this program has been the Defense Production Act (DPA), which grants the President important authorities for mobilizing the Nation's industrial resources for national security purposes. An important authority, contained in Title I, allows the President to order priority performance of contracts for national security purposes. The DPA expired on October 20, 1990. We were able to support Operations Desert Shield/Storm because we were able to substitute the limited authorities of the Selective Service Act, and most importantly, because of the exceptional support of our many contractors.

Although the Persian Gulf conflict bore little direct relationship to our industrial planning baselines, our planning stood us in very good stead, particularly for many items managed by the Defense Logistics Agency. It contributed to our ability to surge items that are not stocked heavily in peacetime, at least partially because we have an inherent ability to surge them in emergencies. Very few major items were surged, the newest version of the Patriot missile being a notable exception. In general; war reserve stocks of major systems were adequate to support Operation Desert Storm.

We are in the process of updating our industrial base planning guidance, to broaden it beyond our traditional narrow focus on surge and mobilization planning. We are addressing industrial base issues more rigorously in the acquisition process. Specifically, our new Defense Acquisition Program Procedures require a specific focus on the industrial base capability to support all new major system acquisitions.

We will continue to protect a surge capability in many of our acquisition and support activities, particularly for consumable items such as munitions. Funding for these surge capabilities will be separately identified as we move toward more modern and efficient methods of industrially funding many of our peacetime support activities.

In summary, we are considering the impact of planned force reductions on the industrial base during the acquisition process. The Department's overall approach is based on the best mix of current systems and new developments. In lean times, we need to make difficult decisions or we will not succeed in meeting both the budgetary goals and the planned force reductions without major problems. I have organized my staff to integrate the full spectrum of talent to properly assess and evaluate the production base. We are continually getting better in our production base analyses and I believe that the procedures outlined in the newly revised acquisition instructions will get us there.

Chairman **NUNN**. Thank you, Mr. Yockey. Let me lead off by asking you, on page 5, you state, "As directed by Deputy Secretary Atwood, the Department has established an aggressive agenda aimed at breaking down barriers to buying commercial items."

You continue to discuss taking in global capabilities and so forth, but other than that, there is not anything here that reflects what that agenda is. I have seen these same statements year after year after year after year and I am skeptical. What does that aggressive agenda mean?

Mr. **YOCKEY**. I would like to elaborate on that now, then, in response, Mr. Chairman—the reason that I highlight Mr. Atwood's stance on this. We have both discussed the issue on our international and commercial activities in the past, and we have obviously both been disappointed.

Taking them one at a time, through the DMR process, we are aggressively attacking the military specifications that inhibit in many ways our ability to buy commercial products. We have recently completed a number of additional actions that are necessary to write better commercial contracts.

As you are, I think, aware, we now have the guidance and will have the guidance of the new committee that we put together to look at what specific statutes we need to revise so that we can revise our FARs and DFARs. Not so much the DFARs, but the FARs. So that we can write basically, "commercial contracts," or purchase orders.

If we can do that and if we can do it particularly in the major programs, as we go though our DAB process—as a matter of fact, it is one of the reasons we are looking at the RFPs before they go out—going after specs on performance basis, rather than detail end-item specifications, to the maximum extent possible.

This is going to be an evolving process. We are not there, yet, but we are starting in that direction and I think that we are making good progress.

Chairman **NUNN**. Are you the responsible official?

Mr. **YOCKEY**. Yes, sir, I am.

Mr. **YOCKEY**. Assisted, of course, by Admiral Jeremiah. Not as my assistant, but as the Vice Chief on the JROC, Admiral Jeremiah supports this initiative as part of the DAB process.

Admiral JEREMIAH. May I reply to that?

Chairman NUNN. Yes.

Admiral JEREMIAH. Let me just ride on that for a minute, Senator.

What we are trying to do is strive for agile technology in the production programs. That does not happen if we permit the services to, or if we write requirements as if they were specifications. We do not want to write a specification for a weapon system. We want to write a requirement that says, I need the capability to do the following thing.

And as the services come in with proposals to accomplish that thing and we weed through them, we get to a position where we are writing requirements that describe what we are trying to purchase in sufficiently broad terms so that as we go through the development process there is room to change and modify within the engineering of that system and we are not caught up with trying to meet impossible specs that we thought were wonderful ideas 2 years ago and cannot come to fruition today.

We are also trying to look at whole systems, as I think I mentioned here earlier in a previous testimony, where we look at a weapon system that is intended—we are looking at trying to deliver a product somewhere. We want to look at the intelligence that supports it, the C^3 system that controls it, the launch platform, the weapon itself, and then the bomb damage assessment, intelligence component and the post-strike intelligence, and look at that whole continuum and sort out, as we go through that, whether we need a stealthy weapon on a stealthy platform with all kinds of supporting systems to help it evade things that it does not have to evade, as an example.

That may or may not be a good example, but there is a stream of activity there that we are trying to look at when we talk about requirements. So, when we hand it over to the acquisition people, we have looked at this thing in the context of what it is supposed to do and the other activities around it.

Chairman NUNN. Obviously, the two of you do not have time to get into the details of very few weapon systems. So, what is the institutional structure that goes with this to make it happen?

Mr. YOCKEY. We have the committees that go through the reviews of the details of all of these before it reaches the DAB, and we go through a number of pre-DAB reviews. And that is supported, of course, by people who Admiral Jeremiah has at his disposal.

But if I might use, as an example, some practice in the past that, for whatever good reasons, we find quite difficult to deal with today and the things we are trying to change. In the past, I think a lot of us got quite ambitious in terms of how far we could reach for the ultimate specification, and we tended to over-specify a lot of our weapon systems. That, in turn, really extended the time involved and our ability to bring in that weapon system and provide it to the Armed Forces, particularly since it has to go through the operational test and evaluation criteria.

If we get the specification to the point that the last increment of performance will cost, perhaps, another 20 or 30 percent of the face value of the contract to achieve it and really does not add much to the operational capability of the weapon system, we are just absolutely on a wrong pass. We have to go back to the ultimate requirement. What is it we have to do? What does this weapon need to do in an operational scenario? And we do not have to go much beyond that.

We should not have to pay the additional price for it or the additional amount of time. This is what we are talking about when Admiral Jeremiah, as I turn to him to tell me what the requirement is, as he can define that requirement, then we can translate that requirement into better performance specifications of the weapon system. And hopefully, two things will occur. It will shorten the time, and it will lower the cost.

We have a number of programs out there we cannot get through the OT&E right now because of some of these problems, and we have to come back and revisit them.

The other thing we are doing at each milestone is, as these programs proceed through, we are revalidating the requirement. We do not do it just up front and then forget about it for the rest of the life of the program. We are coming in on these slices, and if the threat changes, we are going to change the requirement.

Chairman **Nunn**. Senator Coats.

Senator **Coats**. Thank you, Mr. Chairman.

Mr. Yockey, in a recent article in Aviation Week, titled, "Ill-Defined U.S. Defense Priorities Making Industry A Gambler's Paradise", there is a section that states: "Foreign concerns have acquired more than 20 U.S. aerospace companies, 100 U.S. computer corporations, 45 U.S. semiconductor companies, and 35 U.S. advanced materials businesses." Japanese companies made most of those acquisitions. And I think Mr. Nisbet, in his testimony—which I was just flipping through, here—also discusses that, and you and Admiral Jeremiah have touched on that.

I am wondering about your concerns about that and whether or not in the decisions made by the Department of Defense relative to which areas are cut back, whether domestic production capability—whether it is skilled workers or manufacturing technology or management techniques or research and development, and so forth—what role does that play in the decision-making process? There may be lower priority weapon systems that nevertheless would, if maintained, would preserve domestic capability in a particular area.

How does that factor in the decision making?

Mr. **Yockey**. I think there are two or three questions, here, if I understood it correctly. One is the foreign ownership of United States firms. Obviously, we are concerned about it but I think there is some basic built-in protection for that. We would certainly be very, very concerned if it were taking out a key industry that was absolutely essential to national defense. Unfortunately, because of the expiration of the Defense Production Act, some of our ability in DOD to come in and intervene is somewhat now more limited.

But there have been, as I am certain you are aware, over time, a number of American industries that have been bought up by international firms. One comes to mind in defense electronics, or electronics, when Phillips bought Magnavox. Because of the arm's-length relationship on transfer technology and those aspects, I think the national security is preserved. But fundamentally, of course, we would prefer that a lot of that does not take place.

I think the second question is, if we were to look at the labor of a lesser, smaller company, and lesser technology, the technology has to be the overriding requirement.

Senator **Coats**. Sure.

Mr. **Yockey**. We have to be able to continue to advance, particularly with our lower budget. We have to be able to advance the technology. If we do not do that, we are going to do a disservice to the armed services. We have to have available to us the most advanced technology that we can possibly get, and if some of that comes through a combination of commitments with foreign countries, we will have to acknowledge that and watch it very, very carefully.

Senator **Coats**. Are you convinced that you have the authority you now need and that the management systems are in place at the Department of Defense in order to ensure that that will be the case?

Mr. **Yockey**. I do not think I can assure you that because the Department of Defense is such a very large organization, way down, at the levels beyond where we see, some things are liable to occur. But I do not think in a national sense, where a top priority program, as we look through and particularly as we look at all these new disciplines that we are looking at in the DAB process and including reconstitution and sourcing and all that, I think that we will have some visibility now and be able to prevent it from happening, with any serious consequence, anyhow.

I cannot guarantee it, because we have not really come into that process too well yet.

Senator **Coats**. Well, I think if there is additional authority you might need, this would be an opportune time to suggest it to the committee.

Mr. **Yockey**. I think the Defense Production Act would be helpful, if we could get something along those lines.

Senator **Coats**. Admiral Jeremiah, do you want to——

Admiral **Jeremiah**. I would agree with that. The Defense Production Act is a great tool for us to help mobilize the industrial base when we need it for specific actions.

Senator **Coats**. What is the most critical element of that industrial base to maintain? Is it the actual manufacturing facilities or the labor force or the management capability to implement the systems?

Mr. **Yockey**. We are obviously concerned about both, manufacturing as well as the engineering and technical base. But I must say this, I think it is absolutely crucial that we maintain and preserve, to the best of our ability, the inherent technological skills that are available in the research and development and in the engineering sectors so that we can keep the design teams intact as much as possible.

Production per se, particularly if one thinks back a number of years in smokestack America, has pretty much gone by the wayside, including commercially. For that very reason, I would like to see so much emphasis placed now on flexible manufacturing technologies through the use of robotics, through the use of programmatics, and all the things that they can do to bring that closer response time in. So that if we do have to reconstitute, bring up, hopefully we can come up a lot faster through the technologies that are available in the manufacturing sector. So we have to stay very closely coupled to that.

I think the answer to your question is, number 1, the technologies, and number 2, the manufacturing base.

Senator **Coats**. Well, I agree with the chairman, when he says that it is a very wonderful goal and probably a necessary goal to provide that flexibility and that commercialization, that ability to transfer back and forth, implementing it, clearly poses a challenge which I do not believe we have met, yet.

Admiral **Jeremiah**. I agree with that.

Senator **Coats**. To the extent that we can get your guidance on that, we sure are going to need it.

Mr. **Yockey**. It is going to be a very difficult task. Again, with the declining budget that we have available to us and the number of forces that we still want to maintain and to continue to move technology, it is going to be quite an act. But the only way we are ever going to solve it is to devote our attention to planning it in a very deliberate fashion and to do it as best we can in defining what the requirements are and making sure that we not go too far on the requirement side, but take every possible advantage of what technology will have to offer us.

Senator **Coats**. My time is up. Just a quick question to follow up there.

Chairman **Nunn**. Yes.

Senator **Coats**. How would you describe the response from the commercial sector relative to this? Is it enthusiastic, is it curiosity, you know, curious interest? Is it mild, is it weak?

Admiral **Jeremiah**. Skeptical?

Senator **Coats**. Skeptical.

Admiral **Jeremiah**. No, no. That's yours, I think.

Mr. **Yockey**. Obviously, I cannot speak for all of industry, but my own experience in industry—and I just recently had the good fortune of spending a few days in conference with the EIA folks. I think that American businessmen are highly motivated to do whatever they can to support the United States. I think that they are motivated to make available their talents, their technologies and their capabilities.

Now, obviously, the commercial sector is very, very significant to them because the profitability is greater there. But, as we go through times like we are in today when we are not exactly in a robust economy, work is work. If you can find work in the defense sector, I do not see any pulling back of the commercial people from trying to make their capabilities available to us.

They certainly came in in great fashion during Desert Storm on a short-term basis. Longer term, I think there are some problems that we will have to deal with, but as we commit ourselves to moving into the commercial sector and they see that as a market that is available to them—and particularly if we can make it profitable for them—I do not know of any good reason why they would turn their back on it.

Senator **Coats**. Thank you, Mr. Chairman.

Chairman NUNN. Thank you, Senator Coats. Senator Exon.

Senator EXON. Mr. Chairman, thank you very much. And, Mr. Chairman, let me congratulate you for calling this hearing. It is a tremendously important one as we look to the future.

Chairman NUNN. Thank you, Senator Exon. Senator Bingaman and Senator Levin both helped instigate this hearing as the chairmen of two subcommittees that deal very much with this whole subject—Senator Bingaman, Subcommittee on Defense Industry and Technology, and Senator Levin, Subcommittee on Conventional Forces and Alliance Defense. They have a very, very large interest and leadership in this situation. I am glad they are here and I am going to be swapping the presiding role to them as we go through the hearing. I will be in and out, and will be here as much as I can.

Senator EXON. I was about to say just what you said. I know that the two Senators sitting to my right have played a key role in this and we have discussed it in one manner or another. I listen and I hear what you are saying. I guess that I am convinced, Mr. Chairman, that we are not as far along on this proposition as I think we must be.

Above everything else, I think that our cutting edge of technology is going to be absolutely essential to our national security in the future. And since we have come off a decade, or maybe two decades, of ever-increasing budgets for buying anything that indicated it might be able to pop, we are certainly in a far different picture today.

I guess I am looking out at our defense contractors today, and they must be looking for some direction as much as we are here. I would say, for example, that it would be nice, I suspect, if we could maybe just say, well, let us just go ahead with letting the usual system prevail, as we did with the advance technology fighter. We all know that that was a great thing for the winning combination of contractors and a pretty bad thing for the rest.

It seems to me that we have got to come up with some kind of a better plan other than that, or we are going to have a very shrinking industrial base and technology base in the future. So I think this is really one of our most severe challenges. It is going to require a lot of thought and cooperation, and maybe some pretty significant changes in the way we have done business.

Specifically, certainly, I think some of the problems that we have—and I do not know whether we can correct this or not—are the inaccurate program cost estimates that have plagued us. We ought to look at that as far as the future is concerned and the expansion of at least selective weapon systems in high tech that we think are necessary.

It seems that one of the chief causes of uncertainty in the weapons procurement is that initial program cost estimates are typically understated and that well into the program, the Congress is faced with the unenviable task of terminating the program or lose the money spent to date or fund a massive overrun. It happens over and over and over again.

As we look to the future and the expensive programs—such as the Advanced Tactical Fighter, which I just referenced; the new AX, I guess, which is a follow-on to the A-12 attack plane that was canceled; B-2, stealth bomber; the C-17; the SS-21; SDI; MILSTAR;

and many others, much of them under the jurisdiction of my subcommittee—how can more credibility be installed in the Pentagon cost-estimating system so as to avoid the unpleasant surprises of the past and give industry more certainty that, once a program is begun, it will be completed?

I suspect that that will be partly solved, in that we are probably not going to be beginning as many programs. But when I say that I have to recognize that if we are going to keep our cutting edge of technology, then we also should provide some funding, I guess, for just basic research and development to encourage the entrepreneurs out there to come up with new concepts and ideas without facing bankruptcy if their best-laid dreams and plans go astray.

Getting back to the thing, though, do you think we should, or can we do a better job, of estimating costs of these systems than we have in the past? First, do we agree that we have done a pretty bad job estimating costs on most of the programs in the past? We can all agree on that, can we not? What are we going to do about that in the future, or what are your thoughts on it?

Mr. YOCKEY. I share your view and certainly cost overruns and under-estimation of costs is distasteful, not only in the Government, but also in industry.

I do not know that there is any simple answer to that. I think that—and this is a personal opinion at the moment—in the past, a lot of people tried to fix that by going into these development contracts with fixed prices. After all, if you put a fixed-price on it, it is going to stay there, and we have learned, much to the contrary, that that is not what occurs. Usually what happens is that you deny, in a development contract, the ability to make the system trade-offs and the corrections when you need to make them because you are blocked by the terms and conditions of a fixed-price contract. And before you know it, you have a contractor on the brink of bankruptcy or whatever, and he almost is then forced to back away, and we end up with terminations or stretch-outs or really remodifying the programs.

Swinging to cost-type contracts is not necessarily the answer, either, although it is a better answer because it does allow you the ability to make the trade-offs when you need to make them, early on. But it now is going to require a much higher degree of management skills to stay on top of that. The one thing that we have to be very, very concerned about, and conscious of—and I hate to say this, but I am afraid a lot of this is going to fall on my back—we have to make sure that we stop under-estimating as we go into these programs and under-pricing, as well, on the industry side. That means that we have to have a good capability to do a checks and balances in the front—do the should-costs, or whatever, with the parametric pricing where the CAIG comes in.

But even so, we still may find ourselves in a box, so we have gone a step further. We have just recently instituted a policy that before a program goes through a DAB review at a milestone, we are now going to insist that it is fully funded, as well. There is no sense in starting a program if we do not have the funds to complete it, at least for that milestone. So that is also going to cause some rethinking to make sure that we do have a good handle on the cost.

In the past, too many times we would start a program when we did not know where the funding was going to come from. We would just keep hoping that downstream it would appear.

So I think making good, hard, tough decisions like that may help, but the only way to solve the problem is a lot of diligence in watching, in management, which we are trying to do. We have an independent capability to look at these costs at the OSD-level to make sure that we do not get some excursions too far out and by the time we find out about it, it is too late to do anything. That is the best way I can explain what we are trying to do.

Senator EXON. My time is up, but if you could—I think the chairman would agree—is there anything you could add in the briefest form possible, Admiral, to answer my question?

Admiral JEREMIAH. First, the requirements issue, making those requirements realistic and not going to the edge of technology; second, stable funding. The funding in the Department has declined since fiscal year 1985, and within particular line items, as you know, on many of the programs you have mentioned, there has been a considerable instability. If we can flatten that out some and make it a flatter line, we will be better off and the program manager will be better off.

And third, I think more realistic quantities. Coming to the Congress and saying that we are going to buy 750 of these things, when in fact anybody who looks at it realistically would say, hey, we are really going to end up with about 300. You will have a little sticker shock going into it, but it will be closer to where we want to be when we are all done with the program.

Senator EXON. Thank you. Thank you, Mr. Chairman.

Chairman NUNN. Thank you very much, Senator Exon. Senator Lott.

Senator LOTT. Thank you, Mr. Chairman. Another article in Aviation Week, June 17, has this quote in it. The Joint Chiefs of Staff voiced concerns about the effects of retrenchment in the recent assessment of the Nation's military capabilities. "The loss of subtier suppliers, manufacturers of subsystem components of larger systems, is a threat to our ability to field state-of-the-art weapons on a timely basis. Some observers question whether the United States and its allies can maintain separate defense, industrial, and technological bases capable of producing a full range of future weapon systems at a time of declining allied defense budgets."

How do you respond to that, Mr. Secretary?

Mr. YOCKEY. I think we have covered some of this ground here earlier today. We are concerned about it, obviously, and it is going to be a difficult one to deal with. But what we are trying to do is to, again, define and share as much as we possibly can with industry what our real requirements are so at least they will go into it knowingly.

But to try and define how many subcontracts there are out there is a pretty difficult task, and we know it exists——

Senator LOTT. Well, the relationship to our allies part of that statement. Some observers question whether the U.S. and its allies can maintain separate defense, industrial, and technological bases.

Mr. YOCKEY. Admiral, you brought that one up, so you can answer that one. [Laughter.]

Admiral JEREMIAH. If you look at the worldwide defense production of munitions and arms, we are clearly over-subscribed for probably the international needs. Every nation that I am aware of is making some reduction in their weapons procurement and some of our NATO partners have made those relatively minor reductions or maintained a flat program while they see how events work out. But in the main, there has been a reduction in the total procurement of weapons around the world and I think that that is the context in which this statement is made.

The whole weapons procurement process globally is squeezing down, and that means more and more competition from overseas, not only in primary systems but also in the subtier systems, and competition between overseas partners, as industry is squeezed out. Saab, for instance, is going to a larger commercial product and it may or may not be able to stay in the military aircraft production business, depending on the success of their current aircraft. Those kinds of things, I think, are the real thrust of what we were getting at there, the spending in total.

Senator LOTT. I will come back to it in a minute.

Let me just ask a couple more questions.

Admiral, I am very much concerned about the impact of consolidating our shipbuilding industrial base into just two or three sites. How are we going to deal with this problem? Obviously, I represent a shipbuilding area, and it would be one of the two that probably would remain. But I am very much concerned about our industrial base in the shipbuilding area, in particular.

Senator WARNER. I want to associate myself with the question. I have some restrictions because of the Federal court suit going on and I cannot ask that question, so I am going to listen to the answer. [Laughter.]

Admiral JEREMIAH. I was parenthetically seeking the advice of counsel while that soliloquy was going on.

I think that through the next few years, with the orders that are in hand, our shipbuilding industry is all right, but about the time that the chairman has suggested we need to be concerned, we are going to see the orders out of the defense industry, which is the principal procurer of shipbuilding in the United States today from U.S. firms, start to decline.

One would like to say in this instance that you would like to see the shipbuilding industry be able to move out into a commercial market so that we had a mixed base of supplies, of business, as we did years ago. We do not have a level playing field out there today.

Many foreign companies are subsidized by their governments, and for U.S. industry to compete in that environment is very, very difficult. I think we have the quality, and I think we have the modern production techniques today to compete on a level playing field for commercial business—which, by the way, is also in decline to some degree.

This is, I think, personal opinion. It seems to me that it is worth investigating how we handle our trade negotiations with our many areas where we talk to many of our overseas trading partners about various kinds of restrictions on business basis. It might be productive for us to look into the shipbuilding business and find out about that, too.

Senator LOTT. Well, let me, if I could, interrupt you. I assure you, Admiral, that we are looking into that and that a number of us have been working on it and have had meetings with our Trade Representative and even introduced legislation that would force some action. I have joined with Senator Murkowski in that effort.

But the fact remains that, even if we get into more construction of, say, the fast sealift ships or if we get some greater commercial construction, which is almost totally non-existent now, it is still going to be just a little, biddy blip on the scale. When I look at only building one submarine a year and one carrier every 4 or 5 years, I just do not see how we can keep second- and third-tier industry alive, and I think that is going to be an extremely dangerous situation.

And I know you recognize that, too. I guess you look back at us and say, yes, it is a problem, what are you going to do about it. But I would like to hear what you think we ought to do about it. I got one solution, and that is to build more submarines and more carriers, but obviously the boats are not here right now to do that, apparently, or maybe we ought to rethink what we do in submarine construction overall.

Admiral JEREMIAH. I think that from my perspective you do not want to completely destabilize this base force that we have come forward with and that we think is balanced as we see the requirements today.

What we have to do is look at the future requirements, particularly in the third-tier category. Look at what we may have—and I am now talking about reconstitution, not sustaining the existing base for the existing force, but reconstitution. Look at what the global requirement might be and then identify in that global requirement those specific items that we think we have to, perhaps, pay some attention to in order to protect in one way or another, pending the development of the next follow-on system.

I think one of the things that will happen in this process has to be more leapfrogging. You are going to go from one system to the next and in order to keep moving technology forward, you may have smaller order quantities of things but we may have to buy them more frequently than we have. Then we will not have the long production runs that we have today, so that we can move technology along in shipbuilding and in other areas.

Senator LOTT. I am sure there will be other questions in this area.

My time has expired, Mr. Chairman. Thank you.

Chairman NUNN. Thank you. Senator Thurmond.

Senator THURMOND. Thank you very much, Mr. Chairman.

Secretary Yockey, we tend to focus on the weapons production base whenever we talk about defense production. I believe it is important that we also look at the not-so-glamorous industry, such as uniform manufacturing, the shoe industry, and the companies that prepare the meals ready to eat. What is the status of this production base?

Mr. YOCKEY. The best way I can answer that question specifically at this time, Senator, is that I believe it is about level from where we left off from the Persian Gulf arrangement. Where it is going to go, I cannot answer that question specifically at this time, but I will certainly look into it and give you an answer for the record.

Senator **Thurmond**. An answer for the record would be all right.

[The information follows:]

As Operation Desert Storm matured and the forces committed significantly increased, the demand for critical personnel support items such as uniforms, boots, and food rose dramatically. To meet the increases in demand, existing contractors accelerated production. New producers were brought on-line to expand production where required. This "not-so-glamorous" sector of industry that provides these critical, military-unique items, proved exceptionally responsive in supporting the deployment and conduct of operations in the Middle East.

With respect to the status of this critical production base, it currently remains at approximately the same level from where we left off from the Persian Gulf situation. Delivery schedules on existing contracts are being stretched out, when necessary.

However, a situation of continuing concern will be maintaining a production capability for critical troop support items where low peacetime procurements cannot support a minimum sustaining rate to keep the companies in business. Forecasted requirements project lower procurement level's than what we had prior to Operation Desert Storm. We will continue to maintain vigilance over this critical production base that supplies these military-unique items.

Senator **Thurmond**. Secretary Yockey, what consideration does the Department give to the vitality of our defense industry when they suggest export controls on weapons systems?

Mr. **Yockey**. I am going to have to also come back with the answer to that question for the record, sir.

Senator **Thurmond**. An answer for the record will be all right.

[The information follows:]

As the Gulf War so clearly indicated, there is a great need to have export controls on the selling of weapon systems and weapon-related technology so that they do not end up being used against U.S. and allied forces or otherwise contribute to regional instability. However, in responding to the legitimate defense requirements of its friends and allies, the United States is not going to place its defense-related industries at a competitive disadvantage or take actions that would be detrimental to the U.S. defense industrial base. Foreign availability and the impact of a denial of a license on the U.S. industrial base are factors which we weigh carefully in export control decisions.

Senator **Thurmond**. Admiral Jeremiah, some experts want allied governments to examine the merit of trans-Atlantic defense cooperation to help spread development costs and provide economics of scale in weapons production. Would you give me your views on this proposal?

Admiral **Jeremiah**. I think it is a very difficult problem. That sounds like a truism, but one of the things that you find in trans-Atlantic, or trans-Pacific, development of weapon systems is that you deal with sort of different groups of players. On the United States side, most often you will find the requirements individuals, people in uniform and some from the Department of Defense and Mr. Yockey's organization, representing the United States. Overseas, you will often find the contractors themselves representing other nations at conferences that determine requirements. That makes it very difficult for the United States to operate. We are working on cleaning those things up and trying to make it better.

But in the kind of environment I described in which all armaments production is declining, it is going to be very tough to isolate individual systems that everyone will be able to accomplish well.

Senator **Thurmond**. Secretary Yockey, a recent Center for Strategic and International Study reported that existing procurement regulations added $15 to $75 billion to the cost of doing business with the Pentagon. This extra cost tends to discourage business, and you get the product of those who can cope with the paperwork, rather than those who might have the best approach.

Does the Department have any plans to ease the burden on doing business with the Pentagon?

Mr. **Yockey**. I cannot give you any specifics of what we are doing to ease the burden, but I can assure you that we are looking at all possible avenues to ease that burden. And, again, I must apologize. I cannot answer that question explicitly and, again, I will get back to you for the record on that one, as well.

Senator **Thurmond**. Thank you.

[The information follows:]

ACQUISITION BURDENS

The cost figures in the study of $15 to $75 billion resulting from the procurement regulations were related to the problems associated with the sale of commercial or nondevelopmental items to DOD and in particular the cost of compliance with cost or pricing data requirements and cost accounting standards both of which are mandated by law. Although recent studies and reports have tended to indicate that our acquisition regulations need to be changed in order to enhance the acquisition of commercial items by DOD, many of these regulations have as their basis statutory requirements. Congress included a provision in the Defense Authorization Act for 1991 (section 800) tasking the Defense Systems Management College to form a government/industry advisory panel for the purpose of streamlining and codifying acquisition laws. This effort has my complete support and attention, and I am optimistic that meaningful simplification can be achieved and accepted by Congress. Nevertheless, some extremely controversial areas need to be examined, including the applicability to the purchase of commercial products of various statutes that apply to the government procurement process but have no counterpart in the commercial marketplace.

We have not waited for legislative relief to make it easier for contractors to sell their commercial products to DOD. We published revised regulations on April 12 covering the purchase of commercial products. Although these regulations were developed within the legislative framework, they are simplified to the extent possible. Further, as a result of the Defense Management Report, we undertook a thorough review of Departmental and Service acquisition regulations. A revised DOD FAR Supplement will be issued by the end of the summer. In terms of size, it is about one-half the size of the existing regulations. Threshold, certifications, and other regulatory burdens were reviewed and eliminated whenever possible.

Senator **Thurmond**. Admiral Jeremiah, in your statement, you indicate that we must be able to monitor our reliance on foreign sources and be able to react before such reliance becomes a vulnerability. Are you implying that currently we have no such capability and, if that is the case, what must we do to ensure we know the extent of foreign reliance?

Admiral **Jeremiah**. I think the real thrust there is that we have to pay continuing attention to it and improve our capability. We have the ability to monitor those sources. We would like it to be better, and we have to continue to pay attention to it.

Senator **Thurmond**. Secretary Yockey, we frequently hear that low production rates are uneconomical and that they would significantly increase costs. Do you agree with this assessment and, if so, do you have any recommendations on how to overcome this problem?

Mr. Yockey. Obviously, low production rates do increase costs, but I think that it is all relative to what you set out to do in the first place. If your requirement only calls for X quantity and that is what you have to deal with, then what you have to do, of course, is set up the optimum production line to give you that quantity in the shortest possible time.

Time is always the factor that has to do with costs. So if it is a limited quantity, the shorter period of time you can do that, without adding additional capital investment of course, to increase the capacity. Shortening the schedule is the best way to keep your costs in line when you have low rates. To do it over a long period of time does, in fact, increase your costs because time is money.

Senator Thurmond. Thank you, gentlemen, for your appearance and the job you are doing in support of our national defense.

Mr. Chairman, I have no further questions.

Senator Levin [presiding]. Thank you, Senator Thurmond. Senator Bingaman.

Senator Bingaman. Thank you, Mr. Chairman.

Admiral Jeremiah, let me ask about that same statement that Senator Thurmond asked you about. Where you said that we need to monitor our reliance on foreign sources, and I believe just a minute ago, you said we have that capability.

I have been looking at this area here for 3 or 4 years, I cannot find it. If we have got that capability anywhere in the Department of Defense, I would sure be anxious to know where it is.

Admiral Jeremiah. I think that we tried to look into the sources. I think we have some capability and I really should defer that to Mr. Yockey—it is within his organization—to see what the components are in many of the major weapons systems that we buy. We used to then translate that into making a decision as to whether we have to take a defensive posture or work on an alternative. That is the key.

Senator Bingaman. I understand that we may have disagreements as to whether we should take certain policy actions once we determine that we are totally dependent upon foreign suppliers for a particular item that we use in defense.

My strong belief is that we have no exact understanding of the extent of our dependence on foreign sources at the present time. We have no capability in DOD to obtain that information. Of the efforts that have been made in the past to do so, DINET was the most visible. If DINET still exists, I believe it is an under-funded effort.

Are we dead in the water on this subject?

Mr. Yockey. Could I take this?

Senator Bingaman. Either one of you, please.

Mr. Yockey. You are absolutely right. We have no precise understanding of the extent of foreign sourcing. I might state, though, that we must exercise caution when we talk about foreign dependency and foreign sourcing. They are two different things.

There are many things that are foreign sourced that we are not particularly dependent on. We only go to foreign sources because it is cheaper and the equivalent quality. We have the capability in many of our major, prime contractors to duplicate the component or the product. And so, I want to make that distinction.

Senator BINGAMAN. But I do not think we know in either case.

Mr. YOCKEY. That is right.

Senator BINGAMAN. We do not know the extent to which we are dependent upon foreign sources.

Mr. YOCKEY. I will say this, we pretty much know it on a case-by-case basis on the first tier. When you get down two, three, four tiers, or down to the components, we have no idea.

Senator BINGAMAN. I agree.

Mr. YOCKEY. Except for, again, on very, very precise equipments or products where we, in fact, do have a detailed specification and call out the component, like MILSPEC, or MIL-qualified parts. We pretty much can go through a bill of materials and tell that, but it is only on a case-by-case basis.

To do what you want to do, we do not have that capability and we should definitely figure out how to get it.

Senator BINGAMAN. Yes. Do we have any plan to acquire that capability?

Mr. YOCKEY. I guess the best I could say right now, that is a gleam in my eye which I want to try and make into a plan as soon as we can come up with this total planning progress we are doing on the industrial base.

Senator BINGAMAN. One other area, I think you allude to in your statement, Secretary Yockey, the fact that flexible manufacturing was added to the list of critical technologies this year.

I have been concerned that there has not been strong support in DOD for manufacturing and upgrading of manufacturing in the defense industrial base. This year you are operating under a budget of approximately $305 million. And the request for next year was $97 million.

Mr. YOCKEY. Yes.

Senator BINGAMAN. That does not reflect a great deal of enthusiasm within the Department of Defense. Is that likely to change? I would hope so.

Mr. YOCKEY. Yes, I would also.

Senator BINGAMAN. I am just giving you that as an opportunity to say that you are going to have some different priorities in the next budget.

Mr. YOCKEY. Hopefully so, because I might in all candor say this. It was at my insistence that we put the flexible manufacturing on that list.

Senator BINGAMAN. Well, terrific. I think that was a good step.

Mr. YOCKEY. I was not there in time to raise the money, so hopefully next year we will be able to pick it up and pursue that, but this is a very real priority as far as I am concerned.

Senator BINGAMAN. Let me ask about one other specific here. The Office of Science and Technology Policy, at our direction, established a National Critical Technology Panel this year. They devised a report listing technologies they thought were important both for defense and nondefense needs.

One of the technologies listed was high definition imaging and displays. There was a statement in the report regarding this subject that concerned me. First of all, it states that our capabilities are far behind the Japanese and the Europeans. Moreover, the prospects for significant increase in U.S. efforts are poor because the market prospects are too long term and high risk to justify a substantial increase in privately funded R&D, and national security requirements alone do not support a major commitment of defense funding in this area.

I asked Admiral Inman about that in a hearing we had this spring, and he said he disagreed with the last part of that. It is my understanding that he felt strongly that national security requirements did support a major commitment of defense spending in this area. I do not want to misquote him, but he felt that if a judgment had been made that national security did not justify a commitment in this area, he thought it was a mistake.

Do you have an opinion on this? Could you tell me if you share Admiral Inman's view, or share the view that appears to be the case? I notice DOD asked for no funding this year for high definition displays of any kind in the research budget.

Mr. YOCKEY. To be very honest with you, I have not followed that one that closely, but I can give you my views on it.

First of all, this is much the same category as the SEMATECH, where fundamentally it is important to the Department of Defense that the semiconductor industry of the United States maintain its viability. And to the extent that the efforts that are underway at SEMATECH will support the national industrial base in semiconductors, we support that. As you are well aware, we support that, I think, at the rate of about $100 million a year.

I do not think that high definition imagery has really caught quite the same attention from, first of all, commercial industry. I do not think too many of them really look at that as a winner for them to go into. They have long since abandoned TV pretty much. Unless the commercial industry sees a market position they can capture and be a leader—and not in a niche, but a leader—they are somewhat reluctant to go ahead and make that investment.

I firmly believe that there is a requirement for high definition displays in the military, in the cockpit, in the tanks, in the ships, and wherever. To the extent that we know how to do that in the major laboratories, to provide our own forces with that equipment, we certainly do support it.

But you get to the point of, how much definition do you need. I recall, back when I was in industry, I had a contract for heads-up display and I had a problem with jitter, and the jitter requirement is another case of over-specification. The jitter spec was so bad that the eyeball could not see it.

So there, again, how much definition do you really need? I think that we are fulfilling—and Admiral Jeremiah is going to answer this question—but I think we are fulfilling the requirements of the military in that regard. And if we are not, we should continue to invest in that. But I think it is going to take the stimulus of commercial industry to come along and say there is a commercial base here in this, that we could join, like a SEMATECH. I think that is the type of stimulus it would really take.

Senator BINGAMAN. I would venture to say that we are meeting our defense needs in this area by buying it from Toshiba and others who are substantially ahead of our commercial sector in this regard and that concerns me.

Mr. YOCKEY. All right. We will look at that.

Senator **BINGAMAN**. Thank you, Mr. Chairman.

Senator **LEVIN**. Thank you, Senator Bingaman. The issue which Senator Bingaman and others have raised about dependence on foreign suppliers is an issue that concerns me a great deal, too. And I agree with Senator Bingaman and others, we do not have a handle on that.

Your commitment to get one is reassuring, but as I compared your prepared testimony, Mr. Secretary, with the testimony which you presented today, I noticed a change in that regard relative to dependence on foreign supply base. I was glad to see the change, but I am curious about it.

In your prepared statement, you seemed to welcome our reliance on the foreign-supplier base, whereas those remarks on page 6 were eliminated from text that you gave us for delivery here today. Does your prepared testimony, which you gave us in advance, reflect your inside view and what you handed us today, your more public view?

Mr. **YOCKEY**. I do not think so. It may just have been a clean-up process that I was not aware of.

Senator **LEVIN**. You seem to be rejoicing in the foreign production capability in your prepared text.

Mr. **YOCKEY**. No, sir, I can assure you I am not rejoicing in it, but what we are doing, and I think there are two different things here. To try and do co-production programs in concert with certain countries is something that we should and do pursue. When you get down to the component level, where we do not know where it came from, and in terms of reconstitution, that is a separate problem, one that I expressed some concern that we have to watch it and make sure that we do not get ourselves in a position where we are totally dependent as opposed to just dual sourcing. I think it is two different issues.

Senator **LEVIN**. Well, I hope that this testimony as delivered to us in advance does not represent the inside view of the Pentagon, because it is distinctly different in flavor from the testimony which you delivered today, according to the second statement.

Mr. **YOCKEY**. I will look at it when I get back.

Senator **LEVIN**. The top of page 6, it is very, very different, indeed.

Mr. **YOCKEY**. Okay.

Senator **LEVIN**. I want to add my thanks to the chairman for his leadership in this area. It is a very critical area and he and Senator Bingaman and I have talked about it, but it is the chairman's determination to address this issue which is really critically important to this country and to this committee.

My subcommittee had a number of hearings which touched on this issue, but we have not really gone at it in as focused a way as we are trying to do today. Last week, a member of my staff was talking to a high-ranking official at the Army's Tank Command, and this individual said that if Desert Storm had occurred 2 years in the future, that the Army would have had a very serious time supporting the materiel requirements of the war, that we all ought to worry a great deal about that because that gets to the heart of the matter as to whether or not, down the road, we are going to be able to fight a conventional war the way we may have to fight a conventional war and meet the requirements of that war. That kind of sums up at least one of my major concerns about the industrial base and the reconstitution strategy of the Pentagon.

The budget request terminates most major weapon systems. I do not know if the country is aware of that or not, but it is a fact, and that may or may not be appropriate in terms of the reduced threat. But in this process, we could lose the industrial foundation for our conventional forces. That worries me a great deal.

There are a number of issues that I have tried to focus on over the last few months. One, the Department, as I indicated, has proposed to terminate most major, current conventional weapon systems and develop replacement systems. The first question is, will we have the industrial foundation to build what we develop over the next 5 years, and how much more expensive will the next systems be if we shut down the current production base and then have to reconstruct that base 5 years hence. And by the way, that could occur in a number of areas.

Second, if we have a crisis in the coming years after we have terminated production of these major weapons, will we be able to respond as industry was able to respond during Desert Storm/Desert Shield? And can we afford to have an acquisition policy that relies on a 3- to 4-year reconstitution period of our industrial foundations before we support our forces? That is a reconstitution issue.

And third—which is an area which Senator Bingaman and others here this afternoon have gotten at—is the question of our technical expertise because much of the technical expertise that we need to support currently fielded hardware resides in industry. It is known, for instance, that when the Army had to modify the Patriot missile during Desert Storm to deal with the SCUD threat, that it turned to the prime contractor that had the scientific and engineering expertise to quickly modify the Patriot system. And the question is how are we going to replace that technical expertise if we proceed on our present course.

So those are some of the fundamental issues, at least a few of them, that we are looking at in my subcommittee and at this hearing today. In Senator Bingaman's subcommittee, they are focusing on that and some additional issues, as well.

Admiral Jeremiah, let me ask you my first question. The Joint Military Net Assessment indicates that there is considerable risk that the shipbuilding, nuclear power propulsion, and combat vehicle industrial base, "may shrink to unacceptably low levels." Is that still the view of the Pentagon?

Admiral JEREMIAH. I think that is the view of the Joint Staff. I cannot speak for the entire Pentagon necessarily.

Senator LEVIN. Let me ask Secretary Yockey. Do you share that view?

Mr. YOCKEY. Yes, but with some reservation, sir.

Senator LEVIN. Okay. What are those reservations?

Mr. YOCKEY. I do not think that we have looked into it with enough depth that we can really answer that question precisely. That is my reservation.

Senator LEVIN. All right. So you think it may be true, but you are not sure that the evidence is there sufficiently to conclude it.

Mr. Yockey. That is right. I cannot go out and find the evidence and touch it at the moment.

Senator Levin. Well, my time is up. Let me just ask one real quick question. Could I just follow up with one quick question?

Chairman Nunn. Yes. I have no further questions of this panel, and you and Senator Bingaman may conclude.

Senator Levin. I will be done with one additional question.

The Joint Military Net Assessment also states that by the end of fiscal year 1997 it is estimated that it will take 2 to 4 years to restore production capability to the fiscal year 1990 levels for items that have gone cold. If it takes 4 years to get a production line going again, is that an adequate industrial base to meet our military needs in our reconstitution strategy? Admiral, perhaps you could start.

Admiral Jeremiah. I have to answer that in what you will consider to be a wishy-washy answer. It depends. If it takes 4 years to reconstitute and we have a new item coming in development—and I think that is going to be one of the major elements to think about in reconstitution, is the transition of one system into another. In prior years, you would be coming down on the slope of one production unit and coming up on the slope of its replacement. Today, we are going to have those spread apart.

How far apart can we tolerate that spread? It is a function, again, of the reconstitution instance as opposed to the current industrial base. It has to do with your global plans to deal with a threat that is global war and then looking at those key technologies that are necessary to get you from where you are to a production line that will support production for a global war.

If it takes 4 years to do that and the threat scenario is changing, then you are going to have to close that up, either by introducing earlier a replacement item or by extending something that is already in production. If you are in the valley between them, you are going to grit your teeth and hang on and hope that you have identified some of the key components that will allow you to move quickly into the production of the new end item.

Senator Levin. It is that valley which is the valley of risk.

Admiral Jeremiah. It is the valley of risk. We have previously stated that the force structure that we have come in with is a minimum force structure—from our position, the base force necessary to do things. That we put a very carefully tied together program here, Secretary Cheney and General Powell have both testified to the fact that if we see changes downstream that make us feel that is an unacceptable risk, then we are going to have to come to you and change our proposals. And, in fact, that is part of our graduated military response.

Senator Levin. I will close by just expressing the hope that not only would you come to us with proposals, but that you will work with this committee and our various subcommittees as we fashion proposals to meet that valley of risk.

Admiral Jeremiah. But in some cases, I think both of us are going to have to accept it.

Senator Levin. There will be some risks which are acceptable and some which are not?

Admiral Jeremiah. Yes.

Senator **Levin**. Some risks can be minimized.

Admiral **Jeremiah**. Yes, sir.

Senator **Levin** [presiding]. Senator Bingaman.

Senator **Bingaman**. Thank you very much, Mr. Chairman.

Let me ask three other questions on three other subjects, here.

Independent research and development—the House, as you speak about the efforts that have been made in DOD and which I applaud, to increase the ceilings on IR&D—the House has taken off those ceilings and provided in their authorization bill for full reimbursement, as I understand it, for what are determined to be reasonable contractor expenditures for IR&D. What is the Department of Defense position on that House proposal or provision?

Mr. **Yockey**. I am not certain that there is a final Department position, but I would say this. It would be my recommendation to the Secretary that we go along with that. I think that was a very positive move and, again, would go a long way in creating the financial environment that would continue to attract companies into these lean years to do business with the Department of Defense. I think it is a very good move.

Senator **Bingaman**. Okay; 3 years ago, we passed a provision here in the Congress and it became law, to require what we called an integrated financing plan, to be prepared by the Department of Defense and file one each year.

The idea was that this would require DOD to develop a plan that would consider the cumulative impact of all the policy changes that were taking place on the health of the defense industry and tell us what we were looking at in the future. What is your view on that and the usefulness of that? I guess we have not received an integrated financing plan for the fiscal year 1991 or 1992.

Is that something that is a useful thing? Is it an unnecessary, bureaucratic burden? Do we need to rethink that whole idea?

We did that, quite frankly—we had a task force made up primarily of industry representatives who were concerned—this was 3 or 4 years ago—concerned about the health of the industry long term. In working with them, we decided maybe this would be a way to focus attention on the long-term implications of policy changes on the health of our defense sector.

It does not seem to me that this has worked. We do not seem to be getting the kind of response or useful analysis as a result of it that we had hoped for.

Do you have any thoughts on it, Secretary Yockey?

Mr. **Yockey**. Yes, sir, I do. First of all, I fully support it and, in a sense, the requirements of that integrated plan, what it called for, is what I have already been talking about here—increasing the progress payments, increasing the financial health of the industry. We are delinquent, as I understand it. That report was due to you in April, but we have a commitment now that it will be finished at the end of July and would be picking up the very things that I was talking about today.

I think it is absolutely essential that we provide the opportunity for financial reward to industry to be able to participate. If we do not do that, we are not going to find anybody coming to do business with us. So, it has to be fair, it has to be reasonable, but we have to take a very, very sensible business attitude towards that and provide that opportunity for those types of returns.

And that is precisely what we are about, and I applaud that initiative immensely. And hopefully we will give you a good report.

Senator BINGAMAN. Thank you. One other subject I wanted to ask about. In this CSIS report that has been referred to earlier here, on the integration of the commercial and the defense sectors, one of the things that we identified in that study—and Jack Gansler did the lion's share of the pulling together of that, but had some very good people on there. One of the conclusions was that the unique defense accounting practices were also a serious impediment to the integration that ought to occur.

And not just the requirements for military specifications, but these unique accounting practices that we impose on people who want to do business with the Department of Defense. Is that something that is being seriously addressed in the Department of Defense, as well?

Mr. YOCKEY. I do not believe so. Specifically, by eliminating all of the accounting practices, and I do not think it is necessary, either. I would concur that in an absolute sense if you were to take a major Fortune 500 company, that has both commercial and defense divisions, and put them together, you obviously are going to have to change some accounting practices, but I do not think that is really what is envisioned.

I think a major Fortune 500 corporation can do very nicely selling both dedicated defense products and also dedicated commercial products that have an application to defense. I think it is inconceivable to think that on the ATF, for example, that those three prime contractors could go and layer in a commercial accounting practice. I do not think it would be desirable. On the other hand, if you were talking about advanced processors and things like that at the product level, certainly those things are.

But that is why we want to change and provide the ability for the Department of Defense to make those commercial procurements using existing accounting practices that that company has.

Many corporations have many different divisions and all their accounting practices are not necessarily the same, particularly in a corporation that would go out and make acquisitions. As they acquire companies, those procedures basically remain the same until a long period of time before it becomes integrated. So I do not think that is necessarily a major impediment.

I do realize, though, that industry always complains about it and I think that a lot of improvements need to be made. But also, I would suggest that the things that the DCAA auditors are doing today, such as their credit program, if industry would embrace that a little bit more there would be more harmony there.

So, to answer your question, I do not know of anything that the Comptroller is doing to remove those or even that the Congress is doing to remove those types of requirements, but I think we can work around them and through improvements, I think we can do the same job that needs to be done.

Admiral JEREMIAH. Senator, if I could jump on that question a little.

Senator BINGAMAN. Certainly, go ahead.

Admiral **Jeremiah**. From my youth as a cost analyst in PA&E, one of the bases for much of the work that we do in trying to get to Senator Exon's question with respect to cost growth has to do with the ability to independently assess the validity of the estimates that we get from the contractor or from the individual services.

And that, in part, depends upon using the weapon systems' cost breakdown structures so that you can, in fact, identify the key parameters in a system and use that parametrically to project costs for a further system. So some stability in the cost accounting is important to us in order to look ahead and understand what the cost may be. There are other things that may be very onerous to industry that are separate from that.

Senator **Bingaman**. My time is up, Mr. Chairman. Thank you very much. Thank you.

Senator **Levin**. Just a couple of other questions and we will move on to the next panel. I think we may have a vote, also, at 4:00.

Admiral, you testify in your statement that—and I think also here—that one of the most important things to do about the industrial base problem is to better understand the industrial base and that based on such assessments, we will monitor the ability of the industrial base to meet our reconstitution requirements once they are defined. How long do you expect that process is going to take?

Admiral **Jeremiah**. I could tell you that we probably have been going to work on that for a number of years. "D to P" problems have been in our process for a long time.

I think we can get a pretty good handle over the next year on our requirements. The last part of the sentence, I would have to defer to others and perhaps go into it, myself, in order to tell you a good estimate on how long I think it would take us to get into the industrial base and identify the peg points there.

Senator **Levin**. The problem is that industry is going to have to be making some decisions while you are getting your act together in that area, so it represents a real problem. Is there some formal process for this going on?

Admiral **Jeremiah**. There is within the Department and, specifically within the Joint Staff, an effort to identify and put forward in the planning guidance particular requirements for identifying certain parts of this process so that we understand where we are going in terms of global requirements as compared to where we are today.

Senator **Levin**. Secretary Yockey, Secretary Atwood recently told the Technical Marketing Society that the Defense Department should not step in to prevent further consolidation of the aircraft industry and said basically the free market should decide. Frankly, based on experience in a lot of other areas of industry, I am afraid that if we let the free market decide—so-called free market, which is about as free as slaves were in America in 1850—that we are going to lose a lot of industry, our industrial base is going to erode, and we are going to see this drifting over to foreign countries.

If the free market had ruled, we would be selling F-16s to Japan, but others do not allow the free market to rule. And so, I am very much worried about that kind of approach.

My question to you is, are there not larger issues than the free market economic theory which you are going to look to in order to protect an industrial capacity for our defense needs?

Is it just going to be, we will let the free market control the fact that other countries might subsidize—the fact that other countries might say they refused to buy items that we produce more cheaply, because they are trying to create their own industry. Are those factors going to be taken into consideration, or is it just going to be, well, what the hell, we can get it more cheaply abroad short term?

Mr. YOCKEY. No, I do not think those factors will be considered, in that sense, just because they are cheaper or whatever. Our aerospace industry today has an enormous capacity to deal with change. I can think back in my experience with that industry of how a number of those companies used to build airplanes, for example, and now no longer do. But those companies that no longer do, do other things that are of equal importance to us in both the Department of Defense and in the commercial sector.

The fundamental fact of life is, and I think this is what we both have tried to express up front as we opened our remarks, that we are knowledgeable of the fact that we are faced with a certain topline budget that we have to live with. We have to, as distasteful as it is, understand that there is not going to be the same level of production as there has been in the past. We want to make sure that we can continue to avail ourselves of the most advanced technology that industry can bring to bear, and we are mindful of the fact that we must be able to make it attractive for that industry to do that.

Industry, in itself, is not interested in just development, it is also interested in production, as well. So we have to be able to share, I think more openly than we have done in the past, what our production plans really are so that industry can participate in a more open manner. But I do not know how we can ever get to the point that we can say that we must forgo the technology just to create a capability that may or may not be required, really required, for the good of the services.

Senator LEVIN. It is not a matter of forgoing it, it is a matter of whether or not you want to factor in the question of whether there will be a base there to build in the future whatever that technology leads us to. That is a very relevant factor, I would hope, and also whether or not we are going to be in a position to respond to a crisis between the time when that next generation system that the technology leads to is, hopefully, going to be produced. And I would hope that those two factors, at a minimum, are part of your thinking and that they are identified.

Mr. YOCKEY. They will be, I can assure you of that.

As we go through each of these DABs, for example, we have not gone through the DAB on the ATF, yet, but we are really concerned about the effects of that, and we have three major aerospace companies involved in that. And I think the same thing, we have to look at across the board. We may see more teaming of companies. As a matter of fact, we do see that quite often.

But industries themselves have to concoct that arrangement where they think they would be more capable of responding to our needs. It is going to be very difficult, and I do not have a simple answer, unfortunately.

Senator **Levin**. I would recommend, by the way, that you read General Croaker's testimony before the Strategic Subcommittee, Senator Exon's subcommittee.

Mr. **Yockey**. Yes.

Senator **Levin**. Relative to the loss of the electronics industry and the impact on whether we can even build a small ICBM in the future. That we may lose it, and we will lose it by a certain date unless we act by a certain date.

It is pretty chilling as to the implications as to whether or not we can build a system which many people think is essential. I happen not to be one of the big supporters of that system, but that is not the point. I am a supporter of the capability to build it if a majority of us think that we need it. I very strongly think that we must have that capability, and I worry a great deal about the lack of capacity should we need it at the right moment.

Mr. **Yockey**. I will look into his remarks.

Senator **Levin**. Thank you both. We will move to our next panel. We appreciate your being here.

Our next panel this afternoon is Paul Nisbet, vice president of Prudential Securities, and Don Fredericksen, president of Hicks and Associates. Just in time for a roll call.

The buzzer has gone off for a roll call, so what I would like you to do, if you would be willing, is to boil down your testimony to about 4 minutes each, and then I am going to leave and come back. We will have to call a recess. If one of my colleagues has arrived by the time I leave, then we will just pick up from there. But otherwise, we will try to break with your summaries in place, so at least we will have some logic to this proceeding. All right.

I have Mr. Nisbet down first. So would you see if you can summarize your testimony for us? We will give you a double challenge here today.

STATEMENT OF PAUL H. NISBET, FIRST VICE PRESIDENT, RESEARCH, PRUDENTIAL SECURITIES, INC.

Mr. **Nisbet**. Thank you, Mr. Chairman, and members of the committee, for this opportunity to present my views on the outlook for the industrial base for national defense. It is no secret to any of us that defense spending has been going down very rapidly. 1991 was particularly an onerous year for companies dependent upon the defense procurement and R&D budgets for their livelihood, where we had 24 percent cut in the rate of procurement and almost 10 percent in the rate of R&D.

Under the best of circumstances, such funding declines would be deleterious to the industrial base. When exacerbated by disincentives in the current procurement policies and what I would term the heavy-handedness of Government contract administration, the impact upon the industrial base begins to approach the point of threatening our very national security.

We believe that as many as 80 percent of the tens of thousands—I have seen figures up to 120,000-small business suppliers to the Pentagon who were part of the industrial base only 6 years ago—have exited the business. It has not been worth it to them, in a shrinking market, to bear the aggravation of conducting Government business.

Most of the large multi-industry companies whose core businesses are other than defense have been divesting their defense segments. Among those that have tried or succeeded are Goodyear, Emerson, General Instrument, Eaton, Unisys, Honeywell, Ford, and Chrysler. The defense businesses of these firms have to compete on a return-on-investment basis for corporate funds. Most have ticketed their defense operations for divestiture rather than to watch their net worths trend towards zero as they starve on little or no investment.

The large multi-industry firms, and the airframe firms that are the common names in the defense industry are, to the most part, capable both of commercial and military product development in the aerospace industry. The companies in this category range from Boeing, which is 80 percent commercial, to Lockheed, E-Systems, and Loral, which are 80 percent military. They all tend to varying degrees, to switch from military to commercial, or vice versa as the markets dictate. These companies, for the most part, are likely to stay valid providers within the industrial base for national defense.

There is little in today's environment of high-risk, high-investment, low-margin defense contracting that encourages contractors and suppliers to invest stockholder funds in the shrinking defense market. Among the disincentives have been the tax laws changes and administrative orders that have slowed cash flows, increased congressional investigations and corporate and personal litigations, and massive write-offs inflated by ill-conceived contracts. These phenomena have become synonymous with participation in the U.S. defense market.

The infighting over control of fleeting defense dollars has become vicious. Increased legislative branch control within the Government has been gained through requirements for second sourcing, forced teaming, fixed-price R&D contracts, and the limiting of the use of multi-year contracts. Control over industry has resulted from increased contractor oversight and audits; micromanagement; legislation designed to subject the industry to closer scrutiny, such as the False Claims Act; and tighter controls over DOD and industry hiring practices.

Actions designed to keep the Armed Forces from being cut back in size, to keep no-longer needed weapon systems in production, and military bases no longer needed open, all tend to rob scarce funds from the maintenance of the industrial base for defense and to askew them towards less-effective endeavors.

These major incentives have reduced industry cash flow and profits very dramatically. The industry cash flow has been hurt by the elimination of the completed contract method of accounting and by lowering of progress payment rates. Profits have been squeezed by these hugh write-offs that we are all too familiar with.

Add to these disincentives the heavy hand by which Government has often administered its programs. The recently initiated practice of terminating major weapons programs for the reason of default is one. This vehicle to terminate a program used to be limited to cases where the contractor was totally responsible for failure to meet program performance criteria. The firing of several Navy personnel in the wake of the A-12 cancellation would imply that there was culpability within the Pentagon as well as within industry.

I have little doubt that the recent major default declarations of the DOD will be overturned, but not before severe financial and competitive harm has been dealt to several of the Pentagon's largest and most capable suppliers.

Not only is the default vehicle being overused, but the Pentagon is also declaring unilaterally the amount of damages owed by the contractor and declaring them due immediately. When the Pentagon has backed away from the immediate payment declaration, it has done so only after demanding internal changes in the way the contractor conducts his overall business as a quid pro quo.

I dare say that if this sort of practice had been in being for the last 20 to 30 years, we would not have had many of the weapons that we had that performed so well in Desert Storm.

I have been requested to comment on the requirement for the integrated financing plan and the methodology to assess the return on investment in the defense industry. We very much think this is a procedure that should have been in place before many of the pieces of legislation and administrative actions of the past 5 years were implemented, many of which have actually resulted in unintended harm to the industrial base.

We on Wall Street make our investment judgments and economic forecasts, as flawed as they may be, on the basis of mountains of data that already flow from corporate America. I am not convinced that additional data would materially improve the accuracy of our judgments or forecasts. I understand that DOD is requiring submittal of considerable extra data from contractors to satisfy this requirement. To the extent that additional data requirements are truly justifiable by DOD, I suggest they be imposed through the SEC rather than through yet another accounting system geared only to DOD requirements.

In conclusion, I believe that what we need for these times are Armed Forces comprising fewer men and fewer bases, to concentrate on new technology systems that will continue to provide the U.S. with the deterrence that has kept us out of world war for over 40 years and helped us win the Cold War. This, with the prospect of a reasonable profit without undue risks to contractors, would provide the incentives for industry to remain a vibrant part of even a shrinking industrial base.

Kent Kresa, CEO of Northrop, put it very well, and I paraphrase, We need a defense establishment that is, pound for pound, world-class, and we need to make sure that it is seen that way, as it was momentarily during Desert Storm, by all of America.

Thank you.

[The prepared statement of Mr. Nisbet follows:]

Prepared Statement of Paul H. Nisbet, First Vice President, Research, Prudential Securities, Inc.

Mr. Chairman, members of the Armed Services Committee, thank you for this opportunity to present my assessment of the trends impacting the industrial base that supports the national defense, and the ability of that base to support national security policy in the future.

THE DECLINE IN DEFENSE SPENDING SINCE 1986—FOCUSED HEAVILY ON THE INVESTMENT ACCOUNTS

It is no secret to members of this committee that the trend in funding for defense has been downward, in real terms, since 1986. This decline averaged about 2 percent per year through 1990. The drop in 1991 was a precipitous 11 percent. The focus of the decline, thus far, has been on the investment accounts. Procurement, in particular, has been heavily hit, declining by an average 5.5 percent per year from 1986 through 1990—then by a huge 23.8 percent in 1991. The RDT&E account did not decline until 1989. Since then, however, total funding has dropped at an accelerating rate—2.8 percent, 5.2 percent and 9.5 percent, respectively, during the past 3 years. It is the procurement and the RDT&E accounts that are, of course, the life blood of the industrial base that supports the national defense.

The disproportionate decline in these accounts is but one of the factors that would cause us to question the future ability of the industrial base to satisfy future national defense needs. Others include the allocation of the actual procurement and RDT&E dollars appropriated, the disincentives inherent in current procurement policies, and the heavy-handedness with which procurement policies are being administered.

THE RAPIDLY SHRINKING INDUSTRIAL BASE—THOSE EXITING RANGE FROM THE SMALLEST TO THE LARGEST

There are several categories of companies comprising the defense industrial base.

The Vast Majority of Small Businesses Are Exiting The Business. These are the thousands of U.S. businesses that are suppliers to the defense industry primes and major subcontractors. We could debate about the numbers, but it is generally accepted that 5 years ago there were as many as 120,000 such suppliers. None what might be characterized as household defense industry names. Indeed, these are companies predominantly whose core businesses are in other industries. Today we estimate that the population of such companies has shrunken to about 25,000. We believe that most predisposed to quitting the business have already done so. We project that as many as half of these will exit the defense business during the next 5 years, if current trends persist. We foresee little that can be done by the Congress to arrest this exodus from the industrial base.

Large, Multi-Industry Companies Whose Core Business Is Other Than Defense, Are Divesting Their Defense Segments. These are companies, the names of which we are generally familiar—Goodyear, Emerson, General Instrument, Eaton, Unisys, Honeywell, Ford and Chrysler—to name a few. The defense businesses of these firms have had to vie, on a return-on-investment basis, for corporate investments. Most have ticketed their defense operations for divestiture rather than watch their net worths trend-toward zero, as they starve on little on no investment. This process is well under way, and is probably too advanced for any meaningful change through legislative means.

The Large, Multi-Industry Firms Whose Core Businesses Included Defense Are Generally Remaining In The Business. Most of these are suppliers to the aerospace industry, as such, are geared to both the commercial and military sides of the business. They generally are thus very adaptable to the changes in markets, being able to switch emphasis from military to commercial aerospace as market trends dictate. Among firms in this category are Rockwell International, GE, United Technologies, Allied Signal, TRW and ITT. Most of these companies are clearly devoted to their aerospace core business, and are likely to be among the industrial base survivors once the current downturn in defense spending has run its course.

Most Defense Electronics Systems And Giant Airframe Companies Are Also Likely To Remain In The Industrial Base. As with the multi-industry firms having aerospace as a core business, the defense electronics system houses and the airframe companies, to varying degrees, produce a mixture of defense and commercial products. At one end of the spectrum is Boeing, where 80 percent of the company's business is commercial; at the other are companies such as Lockheed, General Dynamics, Grumman, Northrop, E-Systems and Loral who are as much as 80 percent defense. Some of these firms are making dramatic shifts from defense to commercial as rapidly as they can—but usually without straying far from their areas of aerospace expertise.

Some of the more pure-play defense companies are taking their lumps. We expect General Dynamics to shrink by 30 percent over the next 5 years, Grumman by 20 percent. On the other hand, several will likely be growth companies through the mid-1990s, including Lockheed, Northrop, Martin Marietta, Raytheon and McDonnell Douglas.

History tells us that such firms have little chance for a successful, quick conversion to non-aerospace business. Going back to the 1970s, when also faced with a shrinking defense market, attempts by these firms to diversify met almost without exception with disaster. General Dynamics acquired Stromberg-Carlson in an attempt to break into the communications market; Grumman followed Rhor into the Flexible bus business and tried its shaky hand at the solar and environmental systems business; Rhor nearly bankrupt itself on a subsequent venture into the subway car business; and Boeing tried to diversify into monorails and commercial hydrofoil ships—all with debilitating effects on their bottom lines.

Today, only after some 15 years after diversification moves, have some shown signs of being viable, profitable businesses. Raytheon, for instance, moved into the energy, construction and general aviation business, and is only recently beginning to offset its early losses in these areas. General Dynamics acquired Cessna in the early 1980s, and will have to have decades of continued profitable operations to offset their losses from this business following the acquisition.

THE MANY DISINCENTIVES OF DOING BUSINESS WITH THE PENTAGON—ADDING TO THE DECAY OF THE INDUSTRIAL BASE

There is little in today's environment of high-risk, high-investment, low-margin defense contracting to encourage contractors and suppliers to remain in the shrinking defense market. Among other disincentives have been tax law and administrative changes slowing cash flows, increasing incidences of congressional investigations and corporate and personal litigations, and a stifling array of export restrictions. Government dabbling into the management of the business often does more harm than good. These phenomena have become synonymous with the U.S. defense market.

A Hostile Industry Environment—Due To The Politics Of A Tightening Federal Budget

The defense market has many more onerous aspects to it than just the prospects of lower revenues and earnings per share. The infighting over fleeting defense dollars has become vicious, spawning havoc within industry, including:

- Actions by the legislative branch, as it seeks to strengthen its influence over the executive branch in the allocation of dwindling defense dollars by increasing the number of programs awarded competitively and the number of contractors involved on each program. These render final contractor selections more susceptible to congressional influence, and are to many the prime motivation behind second sourcing, forced teamings, fixed-priced R&D contracts and the repeated torpedoing of proposed multi-year contracts and defense budgeting reforms. Congressional resistance to the closing of military bases in the Continental United States is another manifestation of the fight between the Congress and the administration over control of the defense dollar.
- Actions again by the legislative branch, intended to weaken the aerospace industry's influence over the defense dollar. Efforts in this direction include increased contractor oversight and audits, micro-management of defense procurement programs, promulgation of legislation designed to subject the industry to much closer government scrutiny such as the False Claims Act, and tighter controls over Department of Defense and industry hiring practices.
- Combined actions by the legislative and executive branches designed to keep the armed forces from being cut back in size, and to keep all major weapons development and production programs going—even in the face of massive defense budget reductions. In the rare event that the Defense Department makes public the relative priorities of its requirements, as the Congress has often criticized that it will not do, the respective interests in the Congress marshall political support for the lowest-priority programs, and begin shaking down the money tree of planned new high-technology programs having the highest totals of planned expenditures remaining to be funded.

The desire to keep more programs going than can be afforded has brought into being such industry-weakening practices as mandated cost sharing, back-end-funded programs, and again, fixed-price development programs. This latter development has resulted in as yet untold billion of dollars since the mid 1980s being transferred from the cost structure of the Defense Department to debits against industry profits. Programs are stretched out, lowering annual outlays but raising substantially unit procurement costs—providing added cannon fodder for critics of industry inefficiency.

- Finally, Federal budget squeezes, as measured in outlays, have been partially mitigated at the expense of industry by sharply reducing industry cash flow. This has been accomplished by the lowering of progress payment rates, elimination of the completed contract method of accounting, and by squeezing industry profits.

Probably the most damning outcome of these endeavors is the rapid escalation of bitterness and confrontation they interject into the procurement process. Overcoming this atmosphere is perhaps the single-most important problem facing the defense industrial base today.

The International Military Market Place—A Less-Competitive U.S. Industry

The military export market outlook is also rather ominous. The demand for weapons has weakened. There are fewer and generally poorer, potential buyers than has been the case historically. But even where there is demand, the restrictions from the home front jeopardize future sales.

- Restrictions on military exports are continuously being tightened—much to the benefit of the foreign aerospace industries.
- In the Far East, the technology transfer issue is being used as a weapon in the trade war against the Asian countries.

The Europeans were quickly stepping into the vacuums being created until Desert Storm erupted, walking away with many tens of billions of dollars of the most lucrative aerospace sales in the Middle East. It seems that a similar situation could be in the offing with the proposed F-16 sale to South Korea, if too restrictive a policy against technology transfer is adopted.

The surge of export sales by other nations raises the viability of their offerings in the eyes of other potential buyers, creating competition in areas that were once U.S. domains. This trend has serious long-term implications—not only for the future health of the U.S. industrial base—but also for the U.S. balance of payments, and for the effectiveness of U.S foreign policy.

We have seldom had long-term weapons production runs of financially successful programs without profitable foreign sales. The F-4 and F-16 programs, with heavy foreign sales profits, have been among our most successful weapons programs. The A-10, with none, did little for the future of Fairchild.

The Heavy Hand Of Government, A Disincentive To The Industrial Base—The Canceled A-12 Program, A Case Study

How easily dreams of recognized superior performance, high praise, and financial success are dashed—as we have seen on the A-12 program. Similar outcomes have plagued several programs, as a result of default termination decisions in the past 2 or 3 years. The defaulted contractors are proud, successful contractors that produce superb products sorely needed by our military forces—as we have seen very graphically demonstrated in Desert Storm.

If a greater disincentive to industry to remain a part of and a willing contributor to the defense industrial base of the United States could exist, I don't know what it could be. I dare say if the rules being applied over the past 2 or 3 years had been applied in like manner over the past 20 years, we would have virtually none of the weapons that performed well in Desert Storm. This application of the procurement laws, if allowed to stand, could endanger the future U.S. national security.

- *What Might Have Been* . . . A little over a year ago, the $65 billion A-12 program, although known to be in some fiscal and schedule trouble, seemed destined to be carried through to completion. General Dynamics and McDonnell Douglas were awarded a $4.379 billion fixed-price incentive fee contract for the A-12 in January 1988; with $4.379 billion being the target price, and $4.777 billion the ceiling price—only 9 percent higher. The contract called for a 60-40 share line between the contractors and the U.S. Navy to the ceiling price—then 100 percent contractor responsibility for costs beyond the ceiling.

Eight production aircraft had been funded through 1990, priced in the options in the original contract on a fixed-price basis, before anyone could have known with any degree of assurance what was even being priced. Another 12 were due to be funded with 1991 funds. Then 24 were scheduled to be procured in the 1992 budget now before the Congress, and 36 per year thereafter through 2008 (620 aircraft total). The Air Force was to be buying 400 of these probable $100 million aircraft. General Dynamics and McDonnell Douglas were to split-the revenues and profits/losses 50/50 on this huge program.

- . . . *And The Horror That Transpired.* I known all the distinguished committee members know the A-12 story, but let me put my interpretation on it, if you will.

This may enable the committee to see what has transpired in a somewhat different light.

A year ago last April, Defense secretary Richard Cheney completed a review of the A-12 program, one of a series of major weapons system program reviews, finding this very high priority program to be in reasonably good shape. Shortly thereafter, much to his embarrassment, information came to light that the program was up to 2 years behind schedule, that the plane as being designed was overweight, and that the contract was in a heavy overrun status.

After months of review and negotiations, Mr. Cheney startled the world by "pulling the plug" on the program and charging the contractors with default. "Charging" is probably not the right word. This implies that the contractors were innocent until proven guilty. More appropriate phraseology would likely be "declaring the contractors to be in default". The Pentagon then unilaterally "declared" that the contractors owed $1.35 billion for products and services not delivered. This sum was then "declared" due immediately.

Contract default, as I can remember, had always been reserved for situations in which the contractor was solely responsible for the program faults. In other words, the contracting agency, other agencies involved with the procurement, and the suppliers of Government Furnished Equipment (GFE) including prerequisite data and studies, were all without any culpability relative to the program problems. As such, I am unaware of a single instance, prior to the regime of the current Administration, in which a prime contractor had a major weapons system contract canceled for default. The predominant use of contract termination for default, if memory serves me correctly, was with relatively small suppliers, with relatively uncomplicated contracts, where the evidence clearly pointed to a contractor's intent not to perform on the contract, and in most, cases to defraud the government. Even in the notorious case of the "canceled" air defense gun system, the contract was terminated "at the convenience of the government."

This administration has used the contract default route to contract termination freely—first with Lockheed on the Navy's P-7 surveillance program, then with Boeing on two contracts including the "Peace Shield" program, and most recently on the A-12. This was probably done, we believe, to avoid the heavy payments that would have been due immediately from the Pentagon to the contractors, had the determination been that the contract termination had been for the convenience of the Government.

Such payments, as called for in the contracts, would have covered contractor costs and contract cut-off charges, and would probably have brought severe criticism and bad publicity to the Pentagon. This, in turn, would likely have weakened the credibility of the Defense Secretary and the Pentagon leadership in their quests for needed defense funds.

I believe that in none of these circumstances have the contract problems been the sole fault of the contractor. Therefore, none merited use of the termination-for-default determination. When it was recognized that this last declaration could do mortal had to the U.S. industrial base by possibly bankrupting the two largest defense contractors, the Pentagon had second thoughts, offering to defer payment of the $1.35 billion until the matter could be addressed by the courts, or for 2 years—which ever was sooner.

But there were strings tied to this deferral. It was demanded first that McDonnell Douglas cut in half the dividend paid to stockholders. The company was made to consider reducing the remuneration to its executives. Several other operational changes within McDonnell Douglas' operations were virtually demanded. Undoubtedly, there were similar provisions placed on General Dynamics.

McDonnell Douglas and General Dynamics filed a 78-page complaint in the U.S. Claims Court in Washington earlier this month, the purpose of which was to convert the A-12 contract termination for default by the contractors to termination for convenience of the government. The complaint seeks about $3 billion in recouped losses and damages—the elimination of $1.35 billion the Pentagon is seeking, and claims being filed against the Navy for perhaps as much as $1.6 billion. Bases for the complaint included:

- Risk reduction efforts that were eliminated by the government, including studies and tests that are requirement by law to justify award of a fixed-price development contract.
- Seating of specifications by the government that it knew were unattainable, including specified aircraft weight and a low observable propulsion system.
- Failure of the Navy to provide critical data from other classified programs including the B-2.

- Interference by the government with the contractors' ability to execute the contract.
- Failure to apply available funds to execute the contract as required.

The A-12 contract had a $4.7 billion ceiling price and a $4.4 billion target price. General Dynamics, in its $700 million in A-12 charges, has an implied admission that they considered the program to have been $1.4 billion over ceiling.

Using my judgment, as I must when recommending investments, I have concluded that the odds are overwhelming that the courts will see fit to overturn the default determinations. This, however, will probably take 3 or 4 years in the courts, if a negotiated settlement is not reached sooner. Though justice will probably ultimately prevail, the contractors will have undergone severe financial harm and damage to their competitive positions in the interim—perhaps over a several year period.

Defense Industry Micro Management—The Most Recent Example, "Economic Conversion"

The Congress is usually very quick to react to any form of change that might cause problems for a major segment of the population. The slowdown in defense spending is no exception. The Congress has jumped to the occasion with a multitude of actions. Many of these ideas prove to be disincentives to contractors to remain in the industrial base for defense.

Ideas being advanced include requiring advanced notice of plant closings and layoffs, creating alternative-use committees comprised of representatives from management and labor to draw up plans to convert facilities to civilian uses, and a levying of a tax on defense procurement contracts to pay for these new benefits. Task forces have been created and hearings held to:

- Look into various economic options resulting from the anticipated defense industry wind down, address issues of economic conversion to civilian production and the preservation of vital industries, and explore policies that would ease the impact of sharp cuts in weapons production.
- Study ways of preserving a high level of Pentagon research activity without necessarily producing results of that research—a research-and-development system, rather than a develop-and-buy system, with the technology being put on the shelf as a hedge against uncertain future threats.• Consider defense production act amendments, covering proposals for coping with the erosion of the U.S. industrial base.

Most of these actions seem to be based on the assumption that the U.S. can cut defense spending sharply, direct the spending of funds remaining for the economic benefit of the general public, and with very modest defense funding, be able to keep the defense industry in a ready state so that it may be cranked up whenever it may be needed. This was perhaps so, at least to a greater degree, some 50 years ago.

At the time of World War II, in an era light years away from the technological sophistication of today—there was a somewhat greater capability to turn commercial industries into defense factories due to the rather narrow gap in the technology base between the commercial and military sectors. This was an era when the then fledgling North American Aviation, under "Dutch" Kindleberyer, set out with 90 engineers to develop a new fighter for the Army Air Force. This they did, producing a prototype within 90 days. This aircraft became one of the mainstays of the war—the P-5l. Even then, however, it took years to gear up fully the industrial base for military mobilization.

We began development of the ATF nearly 5 years ago, and it will likely be another 6 before we have the first test model flying, and the better part of 1O years before operational aircraft will be available.

Today, military technology has moved at such a pace that it would be impossible to draw people from other fields into the defense industrial base when needed. When highly skilled professionals leave the defense industry to go into other fields, they are in all probability lost to the defense industrial base forever. It is virtually impossible in the commercial sector to remain current in the military technologies. The defense industry at this moment is short of skilled engineers, software programmers, chemists and physicists. If we do not change our ways, very few of the technology majors will choose the defense industry for their career, exacerbating an already critical national security problem.

On the other hand, world wars of the past took many years to reach their turning point—before it became clear who the winners and losers were going to be. Now, with today's high-technology and nuclear weapons, as we all no know, it could be only weeks or even just days. In all likelihood, the weapons we have in inventory on day one of the next conflict will be those with which we will win or loose the war. We probably will not have the luxury of the time we had in World War II to mobilize.

As mentioned above about research and development, there has been talk of mothballing defense plants, and putting these "on the shelf" for future use. Shutting down the Lima, Ohio and Detroit, Michigan M1 tank plants, as a for instance of how impractical this idea might be, would cost an estimated $200 million, while restarting just one such plant would cost about $1.75 billion. Re-establishing tank technical capability is optimistically projected by the army as taking only 48 months. Shutting dawn the program, would put 15 percent of the 10,000 suppliers out of business, and partially shut down another 30 percent.

An Integrated Financial Plan For the Defense Industry Base—An Essential Element For Industrial Base Planning

The committee has required that I comment upon the requirement for the Department Of Defense to develop an integrated financing plan and methodology to assess the return on investment in the defense industry rehired by section 801 of the National Defense Authorization Act for Fiscal Year 1999. We believe this requirement to be an absolute necessity if the affects of new laws, other legislation, and administrative actions on the industrial base for defense are to be estimated in advance. Not to do this would be paramount to sticking one's head in the sand.

I do question, however, the means being pursued to accomplish this end. There are already separate accounting systems for the internal needs of industry, for the SEC, and for the IRS. We believe the last thing needed is yet another accounting system, this one for DOD.

We, on Wall Street, make our investment judgment and economic forecasts—as flawed as sometimes they may be—on the basis of the mountains of data that already flow from corporate America. I am not convinced that increments of additional data would materially improve the accuracy of our judgments and forecasts. To the extent that additional data could truly be justified, I suggest these requirements be satisfied through the SEC rather than yet another accounting system geared to DOD requirements.

THE SOLUTION—A NATIONAL SECURITY POLICY GEARED TO A DOWN-SIZED, WORLD-CLASS FORCE

What we need are Armed Forces comprising fewer men, fewer bases that concentrate on new-technology systems that will continue to provide the United States with the deterrence that has kept us out of a world war for over 40 years. This, with a reasonable profit for programs well conducted, would provide the maximum incentive to industry to remain an important part of the industrial base for defense.

Kent Kresa, CEO of Northrop, perhaps said it best.

"If are going to have smaller budgets and fewer new systems, then we had better face up to it and make certain that the defense industry we're going to rely on continues to be, pound-for-pound, world-class. And we need to make sure it is seen that way by the rest of America—by our subcontractors and suppliers, by the investment community, and by the men and women who work in this industry and the younger men and women we want to follow them.

"We need a strategy we can all understand and work within. And "all" means the Department of Defense, the Congress, the industry, and the people. Such a strategy must be supported by clear, comprehensive communications between the government and the Congress and the American people about the role and purpose of our military forces, and what it will rehire to fulfill that role in terms of money and manpower and equipment.

"Our military tradition in this country is strong and highly respected. But the notion of a robust, permanent military force backed by a robust, permanent defense industry is relatively new. It is not deeply rooted in our American tradition. In fact, it is barely 40 years old.

"We must not forget that the Minuteman of American legend is the farmer with a rifle in his barn, not a captain with a missile in a silo. When you add that historical truth to today's budget deficit and the other pressing needs of our society, it shouldn't be surprising that some would rush to move money from Europe's Fuylda Gap to the Treasury's funding gap.

"That's why it's doubly important to remind ourselves that for the past 40 years, a strong and credible defense has worked. And it helped to win the Cold War. And that's probably the point the American people are telling those pollsters, why two out of three Americans aren't yet ready to cut defense spending significantly."

Senator **Levin**. Mr. Fredericksen, please go ahead with your statement.

STATEMENT OF DON N. FREDERICKSEN, PRESIDENT, HICKS AND ASSOCIATES, INC., MCLEAN, VA

Mr. **Fredericksen**. Thank you, Mr. Chairman.

I am pleased to be here to share some of my thoughts with you on this important subject. Within the last year, we have seen a lot of terminations and cancellations of a number of programs. The long-term effect of these is certainly not clear yet, but more are likely to follow.

The causes of the cancellations are varied. They include technical schedule and cost problems. In some cases, the cause has been fulfillment of an inventory objective, and that has been made easier by truncation of the force by 1995. Other causes for cancellation include: the program is no longer affordable; or a change in priorities, or a change in requirements.

Whatever the cause, though, the process has been characterized by some, and I agree with this, as more or less an ad hoc downsizing of the defense industrial base, as opposed to being based on some systematic plan.

One of the examples of systems I personally was upset or concerned about seeing stopped is the Army's M1/A2 tank. The Army's tank plant will close after the production of 62 M1/A2 tanks, as I am sure you are all aware, the latest model. But the Army will still have over 3,000 M1 tanks with 105mm guns, which have marginal lethality against T-72s, let alone more modern tanks like T-80s and future Soviet bloc 1 and 2 tanks, which are likely to be exported.

That, to me, is a real problem. Allowing a major weapons system like this to go out of production before a successor is close at hand seems imprudent to me.

Another aspect of the M1/A2 issue which some of my Army officer friends are concerned about, and I share this concern, is we are going to sell some 300 or more to Saudi Arabia. Thus, Saudi Arabia will have a larger number of the latest American tank than the U.S. Army.

An alternative course of action which was recommended by some was to have a combination of a very low production rate and a modest upgrade program that would convert all the M1s to an M1/A2 configuration. This program would have kept the tank-related industrial base going, most of it at least, at a sustaining rate.

There are many problems with taking an ad hoc approach to downsizing the defense industrial base. First of all, it limits our reconstitution capabilities to respond in case there is a Soviet reversal, or in case we have to ramp up production to meet some other threat. None of the wars we have had over the last 50 years have been predicted. They are always a surprise development. Any future conflicts are likely to be the same.

An ad hoc approach can also create important gaps in our ability to modernize our own smaller forces and adversely affect the future capabilities of our forces as well. In addition, there are some lesser points. If the industry is seen to be going down in a disorganized way, it is not an attractive industry for young people coming out of the universities to enter or for the entry of new firms.

Mr. Nisbet mentioned that the defense industry is not a very attractive investment, and it is not a very attractive industry to enter either; certainly far less than it has been.

We need a systematic approach to phasing down the defense industry so that we retain the critical defense industry segments. These segments include program management teams, design teams, production engineering, and the capability to transition to production. You need to have some production going on or you do not solve that transition problem.

We need a long-range plan for downsizing the defense industrial base. Such a plan would involve a series of steps along the following lines. First, we need to focus on the key capabilities by military mission area. What are the war fighting capabilities that we need? There are really basically a few dozens of these key capabilities that are embodied in systems or in system capabilities.

Second, you need to identify the critical defense sectors that provide these key military capabilities. Third, you have to do some long-range planning beyond the FYDP. You have got to look out to perhaps 2007 and do a long-range plan to determine—perhaps in the form of layer cake charts—how the defense budget is going to cover different segments of these mission areas. The plan would show what is covered and what is not covered in terms of these critical military capabilities and the ability to generate them.

Once you find out what the problem is, which is what I am really talking about, then you develop a plan to ensure that we will have access to the critical defense industrial sector capabilities that we need.

Now, in thinking about that, you have the following alternative sources. The first is existing U.S. full-scale development programs or production programs with existing programs. Then the capability is covered. Another attractive possibility is a prototype program, where you develop and produce a few units.

A modified commercial program might also satisfy some of these needs. For example, a tactical vehicle like a truck might be satisfied easily by a slight modification to a commercial vehicle, or even an observation helicopter requirement might be satisfied by a minor modification to an existing commercial helicopter.

Another alternative is an off-shore source, which has a different set of problems associated with it. For instance, you must be sure it does not make the United States vulnerable to political pressures or the possibility that the source will disappear. These are the major sources.

Related to maintaining the defense industrial base is the acquisition process. Last summer's Defense Science Board study recommended a number of things, which I think make a lot of sense. At the top of the list was more flexibility in the acquisition process, so that we can do something other than the pipeline.

For the last X years we have had a pipeline concept, where we measure programs by getting them into production and deploying them with our forces. We need to have more flexibility than that. There may be many instances where we do not want to go into production or we want to go into very limited production.

We may want to go back and recycle development, to get a better improvement over the predecessor system, for example. We need to allow the design, development, demonstration, and production of limited quantities of some systems without anticipating full-scale production and deployment.

Another thing we need to do is treat R&D and production-based maintenance as products in their own right and allow industry to make a fair profit from these products.

We also need to get more out of our increasingly limited defense dollars. One way of doing that is to have more flexible manufacturing processes that are reconfigured for different products more easily than the current processes. Modular designs of equipment can help do that so the equipment could be applied to more than one system, and so you get the rates up over what they would have been otherwise.

Another area that is very important is production techniques that minimize the cost penalties of low-rate production. When I was at Convair many years ago, we were faced with this problem. It was in the middle of the 1960s—and we were producing Atlas missiles at rates of 10 to 12 per month. Suddenly we were faced with going down to maybe 2 or 3 dozen a year, instead of 120 or 130, a factor of 5 decrease in the production rate.

To minimize the unit cost increase, we had to totally reconfigure the production sequence of events. We had to go to a substantially different division of labor. In some cases we had to get union agreement. We had to operate more like an experimental factory, instead of having a production line like we had when the Atlas was produced at higher rates. And instead of the unit costs going up by a factor of 3.5, which is what it looked like it was going to do, the cost only went up by about—and this was significant—45 percent for the unit price—an increase which was considerably more tolerable.

That type of thing can be done. But the problem, as I see it, in designing our production programs is that we always design for peak rates that we either do not meet at all or meet them for a very short period of time only. That approach just does not make sense. When you configure the production facility for very high rates, and then try to operate it at lower rates, it is not likely to be very economical.

We need more research on costs reduction. If you study our IRAD programs and our government lab programs you will be hard pressed to find programs that have as their major objective, reduction in cost, as opposed to increasing performance or creating some new capability. We need to have some fraction of our research effort devoted to cost reduction.

Another point is enhanced use of design tradeoffs to eliminate all features that do not have high payoffs in cost-effectiveness. Now we do some of this, but I think we could do a lot better. The Packard Commission report highlighted gold-plating as one of the major problems in the Department of Defense Acquisition. That remains a major problem in the Department of Defense today.

What we need is a more stringent criteria in judging whether something is worth its cost. Today, cost-effectiveness studies are done on a new system compared to the predecessor system or some other alternative, at best the entire system is compared with the other system. We rarely take a look at whether the incremental performance measures or the subsystems are cost-effective. If we forced the acquisition process to do that we would get better buys for our money.

Another way of getting more out of our defense dollars is by increased use of commercial products and processes. I was glad to see some discussion on that earlier. This is a tough nut to crack. The problem is you have this big barrier of military specifications. For years the Defense Science Board studies have made the recommendation that we need to use more commercial processes and products. It is a good idea, and in many cases commercial components are not only cheaper, but they are better than the military spec versions.

But how can you get the procurement people to use commercial products? We must create some incentives so they will strive to a high percentage of commercial products on their programs, and then reward them for that. And, we also need to give the program manager the authority to make judgments that he does not need certain specification.

During my first tour in the building in the early 1970s, General Abramson was, at that time I think he was a colonel, running the Maverick program. The Maverick program was a total package procurement program, where the production and R&D was lumped together, but there was flexibility in taking funds out of one port and applying to the other. But the program manager had to worry about the ceiling, because if it were exceeded, the program was subject to a program review.

Well, he came in and said that the program was near the ceiling and he was worried it would be breeched. He was concerned because he did not want to have a program review, an understandable position. Not only is a review a lot of work, but the program then becomes at risk. He had a plan. He had identified about a dozen specs that affected the unit cost of the Maverick missile. Some were painting and anti-corrosion specs—an assortment of different things.

He asked me if I minded if he would get rid of these specs—not adhere to the specs—and instead use good industrial practices. And I said, not only will I go along with your plan, you should get a medal for taking that initiative. This is exactly the right thing for a program manager to do.

I said, obviously, you must be sure that you do not make some bad choices in ignoring some of these specs, you must be sure you are on firm ground. But once you are, I applaud you for taking that action. That type of authority is exactly what we need to give our program managers. We need to give them encouragement to do three kinds of substitutes, give them incentives to do that, and then you might see some gains in the use of commercial products.

Chairman **Nunn**. Could I ask one question here?

Mr. **Fredericksen**. Yes, sir.

Chairman **Nunn**. What incentives do you give a program manager?

Mr. **Fredericksen**. Well, a program manager, if he is a military person, you probably cannot give him financial incentives, so I guess all you could do is give him recognition, make him an example of the kind of manager that you want. He could be the program manager of the year, or be one of the top program managers of the year. He would become sought after to tell other program managers how he has used commercial products.

You can give him recognition, but it will be difficult to provide other incentives. Although I am not sure that is impossible. Maybe we could figure out a way to give him some financial incentive.

With civilians, though, you have the possibility of giving them bonuses.

In summary, we need a logical, systematic, Department of Defense plan for downsizing the industrial base. We need to put someone in charge in acquisition, and begin the process now while there is still time to take a balanced approach.

Thank you, Mr. Chairman. This concludes my remarks. I would be happy to answer any questions.

Senator LEVIN. Mr. Nisbet, just a couple of questions. There have been regulations issued recently by the Department requiring that fixed-price development contracts over $25 million be approved by the Under Secretary of Defense for Acquisition. What is your reaction to that? Are you familiar with that?

Mr. NISBET. Yes.

Senator LEVIN. What is your reaction to that?

Mr. NISBET. It is obviously long overdue. We have seen numerous writeoffs, huge writeoffs by most of the major contractors as a result of fixed-price development contracts that could not be priced with any degree of accuracy. The DOD has spoken against these before, and yet the services continue awarding such contracts. Hopefully this time the DOD pronouncements will be strictly enforced.

Senator LEVIN. The House of Representatives recently provided for full reimbursement of reasonable contractor expenditures for independent research and development, IRAD. And assuming that full allowability is provided for in the final bill, can you tell us or do you have an opinion on how much this is going to cost over the next few years?

Mr. NISBET. I am unaware of the specifics of the recent House action. No, I am afraid I cannot answer that.

Senator LEVIN. All right. And the last question I have for you is on warranties. The General Accounting Office has given us some reports on management controls over the administration of warranties. They said they needed improvement and urged the services to develop procedures to determine when a warranty is not cost-effective. Do you have any views on the warranty requirement, on decisions to invest that defense contractors might make? Has that had a big impact on investment decision?

Mr. NISBET. To the extent that the warrant requirements increase risk, certainly it would.

Senator LEVIN. Has it in the last few years? Have you noticed any impact on our warranty rules?

Mr. NISBET. Not anything very noticeable. Obviously, warranties can be provided for to cover virtually any risk, but at a price. And the industry is not objecting—anything I have seen—to the actual warranty process, but only to providing such warranties without appropriate compensation for that extra risk.

Senator LEVIN. Thank you.

Mr. Fredericksen, as you have testified to and a number of us have pointed out, there are a lot of programs in this budget that are scheduled for termination. And you have testified quite eloquently as to what the implications of that could be. What programs that are scheduled for termination do you consider most serious in terms of losing the industrial base? Can you identify two or three or four programs, or whatever number you would like?

Mr. **Fredericksen**. I mentioned the M1. I am concerned about Stinger also. I think that there is a case where you have a great fraction of our army, and marine corps as well, using Redeyes. I do not know what the number—I do not have the current number, but it is significant. And Redeye is perhaps an order of magnitude less capable than the Stinger. If you drive an aircraft over 400 knots through a Redeye defended area you can easily avoid its consequences.

Stinger, on the other hand, is really difficult to defeat. The target aircraft must go up another 50 percent in speed, and it can try flares and jammers with little chance of success. This manportable air defense missile capability has been unique in a couple of contractors. And I think it is important. It could have a big leverage effect on some U.S. military deployments. So, it does not make sense to me to lose that capability.

The Bradley is another example though somewhat less critical than the M1. I feel that the Bradley line should not be terminated until we fill the slots that are being filled by M113s—slots where we would like to have good, capable infantry combat vehicles.

The Apache is another example. I am concerned with shutting down the Apache line before we are sure we are going to have an LH. We are just starting now in the LH demo phase, and there is too big a time gap. That is too large a risk.

There is Maverick. The cancellation of Maverick did not make sense at all. It turned out to be a big tank killer, as well as a killer of many other systems in Desert Storm.

There are a number of other weapons systems where the buys have been truncated before a reasonable inventory was reached. We really need to rethink some of these programs. I am referring to some precision-guided weapons, as opposed to the dumb bombs. I think as the data from Desert Storm unfolds, we are going to find that dumb bombs did practically nothing compared to precision-guided weapons.

Another example of a system I was upset to see canceled, and it obviously would have an effect on the industrial base, is the A-12. I do not want to argue the justification of canceling it or not, and it looks like maybe we will get an AX to replace it.

The Fog-M was another example. The fiber-optic guided non-line-of-sight missile that the Army was developing. And again, the Army may start another version of the missile.

But the way I see it, there are certain mainline systems whose industrial base should be maintained. Back on my first tour in the Pentagon we used to have an unwritten rule of thumb, and that was that we did not let a system go out of production until we had its successor almost in hand, so that the risk would be relatively small. Today it appears that we are willing to take much larger risks.

The F-16 might be on my list too, except with it we have a somewhat different case. The Air Force probably has enough F-16 aircraft to fill all of its inventory objectives. However, closing down the line is worrisome because the Air Force will not have any fighter lines open when it is shut down.

The cancellation of the NATO Anti-Air War System (NAAWS) was another thing that I thought was a mistake. Again, this was a developmental program, a naval short-range air defense system that is very important for shooting down sea-skimming cruise missiles.

Those are some of the example programs that come to mind.

Senator **LEVIN**. Thank you.

I just have one other question for Mr. Fredericksen, then I am done.

Who, in your judgment, inside the DOD either is worrying about the industrial base or, if there really is no one who is doing an adequate job, who should be? Where should that worry be located?

Mr. **FREDERICKSEN**. Well, I have read statements by Deputy Secretary of Defense Atwood and I know some of the policy people, for example, Libby, have been talking about this in public speeches. And a lot of people are expressing concerns about it, but I think that what we need is somebody in acquisition, reporting directly to Yockey, to formulate and head a task force that will really collect all the disparate things that are going on, and develop a central long-range plan to look at what is happening to the industrial base.

I think without that, the downsizing of the base will tend to be ad hoc, rather than systematic.

Senator **LEVIN**. Thank you.

Thank you, Mr. Chairman.

We appreciate your being here and this is a subject which is of great concern to this committee and the Chairman. Many of the chairmen of subcommittees, as you have indicated, have some real worries here. And your testimony represents a real contribution to our deliberations. We want to press the Pentagon to focus their concerns better and to address them, but we also have some responsibilities here which we are going to try to do the best we can in terms of our own actions.

So we will stand adjourned.

Chairman **NUNN**. Let me also thank you. I wish I could have been here the entire time, but I had six other meetings to attend. I have read your testimony and found it most interesting, and we will benefit from it.

I think we are really going to have to pay an awful lot of attention to this subject. It is one of the most important and one of the most challenging and one of the least discussed. We appreciate very much your being here and your insight.

Mr. **FREDERICKSEN**. Our pleasure.

Chairman **NUNN**. Thank you.

[Whereupon, at 4:55 p.m., the committee was adjourned.]

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